Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards

EPA Response to Comments Document for Joint Rulemaking

United States
Environmental Protection
Agency

Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards

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Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States Environmental Protection Agency

EPA-420-R-10-012
April 2010

Introduction

The following is the Environmental Protection Agency's (EPA) Response to Comments document for the EPA and National Highway Traffic Safety Administration (NHTSA) Joint Rulemaking: Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. The following document contains verbatim excerpts of the commenter's text followed by EPA's responses. Citizen comments that raised unique substantive issues are included. In addition, several thousand citizens commented through mass e-mail campaigns; these comments are not included individually, but rather examples are provided. The comments and responses are organized by topic (see Table of Contents prior to each section) to help the reader find comments and responses of interest. An index of commenters and the associated docket numbers is also provided.

This is an EPA document and does not contain NHTSA's responses to comments. NHTSA's responses to comments are contained in the joint preamble and the NHTSA Final Regulatory Impact Analysis (RIA) for the rule.

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Air Permitting Forum		OAR-2009-0472-0128, 7253 NHTSA-2009-0059-0128
Alliance of Automobile Manufacturers	Alliance	OAR-2009-0472-6952
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1. General Comments

1.1 General Support

Organization: Alliance of Automobile Manufacturers (Alliance)
Aluminum Association
American Chemical Society
American Council for an Energy Efficient Economy
American Lung Association of California
Association of International Automobile Manufacturers (AIAM)
Bieling, Andrea
Biotect Connect, Inc.
BMW of North America, LLC (BMW)
BorgWarner
Bright Automotive
California Air Resources Board
California State Senate
Cambell, Bruce
Chamber of Commerce of the United States of America
Chew, Yuli
Chrysler Group LLC (Chrysler)
Clarke, Darrell
Clean Energy Fuels
Coalition for Clean Air
Consumer Federation of America
County of Greenville, SC
Cummins Inc.
Dewey, Scott
Eadie, R. Frank
Ecology Center
Environment Michigan
Environment New Jersey
Environmental Defense Fund
Epps, Jennifer
Ford Motor Company
General Motors
Georgia Department of Natural Resources
Glasser, Mark
Honda Motor Company
Honeywell International, Inc.
Honeywell Transportation Systems
Hyundai Motor Company
Insurance Institute for Highway Safety (IIHS)
International Council on Clean Transportation
Kia Motors
Lance Tunic

League of Women Voters of South Carolina (LWVSC)
Lee Auto Components
Magavern, Bill
Manufacturers of Emission Controls Association
Mass Comment Campaign (13,829) (Union of Concerned Scientists)
Mass Comment Campaign (18,583) (unknown organization)
Mass Comment Campaign (19) (unknown organization)
Mass Comment Campaign (2,332) (unknown organization)
Mass Comment Campaign (27,307) (Alliance for Climate Protection)
Mass Comment Campaign (32,918) (Sierra Club)
Mass Comment Campaign (326) (Student PIRGs)
Mass Comment Campaign (7,239) (unknown organization)
Mercedes-Benz (Daimler AG)
Mitsubishi Motors R & D of America (MRDA)
Motor and Equipment Manufacturers Association
Mr. Richter - Environmental Capital Partners
National Asphalt Pavement Association
National Association of Clean Air Agencies (NACAA)
National Association of Manufacturers
National Automobile Dealers Association (NADA)
Natural Resources Defense Council
New York City Law Department
Northeast States for Coordinated Air Use Management
New York State Department of Environmental Conservation
New York State Department of Transportation (NYSDOT)
New York University School of Law, Institute for Policy Integrity (IPI)
NGVAmerica
Nissan North America
Pacific Unitarian Church, Green Sanctuary Project
Peters, Doug
Pavely, Fran, California State Senate
Physicians for Social Responsibility, Los Angeles
Public Citizen and Safe Climate Campaign
Sack, Emily
Seal, Kathy
Sierra Club
South Carolina Department of Health and Environmental Control
South Carolina Pulp & Paper Association (SCPPA)
South Carolina Wildlife Federation
South Coast Air Quality Management District
Southeastern States Air Resource Managers, Inc. (SESARM)
State of California
State of Connecticut
State of Connecticut Department of Environmental Protection
State of New Jersey
State of Washington Department of Ecology

Steiner, John
Toyota Motor North America
Transportation and Buildings Policy for the State of Massachusetts Executive Office of Energy and Environmental Affairs
U.S. Coalition for Advanced Diesel Cars
Union of Concerned Scientists
United Auto Workers
University of Miami, School of Law
University of Michigan Transportation Research Institute (UMTRI)
University of Pennsylvania, Environmental Law Project
US Steel Corporation
Volkswagen Group of America (Volkswagen)
Washington State Department of Commerce
Webb, Alysha
Weiner, Jill
Winograd, Marcy

Comment:

Alliance of Automobile Manufacturers (Alliance)

First, we want to commend EPA and NHTSA for the effort invested in putting this complex joint rulemaking together and for taking the lead in harmonizing the CAFE and Greenhouse Gas programs into a workable set of requirements. The Alliance supports the overall rule and in particular supports the agencies' coordinated attribute-based approach. [OAR-2009-0472-6952.1, p.1]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 83-86.]]

While this proposal covers model years 2012-2016, we agree with EPA and NHTSA that it is important to create a strong coordinated National Program that continues to provide a national standard for light-duty vehicles in model years beyond 2016. This is a key to reducing the impact of vehicle greenhouse gases on our global climate.

The proposal provides manufacturers with a roadmap for meeting significant increases for model years 2012-2016. It calls for an increase in the average fuel economy in new vehicles by 40 percent to a combined 35.5 miles per gallon. As EPA and NHTSA have stated, final rulemaking prior to April 2010 is essential to providing manufacturers with the certainty and lead time necessary to plan for the future and to cost effectively add new technology.

The Alliance members are committed to continuously improving fuel economy and thereby reducing our greenhouse gas emissions. In fact, the motor vehicle industry has committed to reduce greenhouse emissions more than any other sector of the U.S. economy. By the Agencies' own estimates, these new standards would lead to reductions of 62 billion gallons of fuel, or CO2 emissions totaling 656 million metric tons, during the useful lives of vehicles 2012 - 2016

vehicles. The elements of the proposal before us -- a harmonized and coordinated National Program, attribute-based approach, the available compliance mechanisms and general implementation elements provide this industry with certainty and flexibility necessary for achieving ambitious reductions in greenhouse gases and significant savings in oil consumption proposed by the rule.

In going forward to 2017 and beyond, this joint coordinated effort by EPA and NHTSA on a national plan is a process we endorse for the future well-being of the industry. It is important to include all key stakeholders including California and states adopting the California standards into this process. A goal for going beyond 2017 would be to achieve even greater harmonization between the EPA and NHTSA program. Already the auto industry is transforming itself and reinventing the automobile. Automakers have made major investments into developing new fuel efficient technologies, and the results are continuing to show in the marketplace. More than 50 technologies offered in vehicles for sale today reduce emissions, increase mileage, and allow these vehicles to run on cleaner fuels. Today consumers can buy more than 130 models that achieve 30 mpg or more on the highway, and they can choose from more than 27 models of hybrids and 8 models of clean diesels.

As we stated in our May 18th letter of commitment, the Alliance fully supports the adoption of a National Program to address both greenhouse gases and fuel economy, and further we commend the Federal Government for taking a leadership role. By eliminating unnecessary complexity and providing flexibility for the development of individual manufacturers compliance plans, the proposed rule will allow manufacturers to develop products that consumers will want to buy and only enhance vehicle performance with respect to greenhouse gas reductions and oil savings.

In closing, the time has come to move all stakeholders forward. The Alliance believes that any effective, efficient program to address climate change must be built on a single strong national framework administered by the Federal Government. This framework should acknowledge the specific product and sales structure of individual manufacturers' fleets, and be designed in a way that challenges all manufacturers fairly by including appropriate implementation and compliance flexibilities without negatively affecting overall greenhouse gas reductions.

To this end, we encourage EPA and NHTSA to work closely with all stakeholders, to refine the technical framework of the program.

Aluminum Association

The aluminum industry congratulates NHTSA on its continued reliance on a size-based approach to setting CAFE standards since there is ample evidence to confirm that that size is the vehicle attribute that can best assure design and structure consistency across model years and preserve safety. Increased use of high strength, low weight materials like aluminum will increase vehicle fuel economy, reduce tailpipe emissions and improve safety as manufacturers strive to meet ever more challenging fuel economy requirements. [NHTSA-2009-0059-0067, p.1]

American Chemical Society

The American Chemical Society is pleased by the Obama Administration's recently announced plan to increase and standardize automobile fuel standards. ACS is a long-time proponent of increased automotive efficiency standards and previously supported legislation to increase Corporate Average Fuel Economy. As such, we are gratified to see this move by the Administration. [OAR-2009-0472-3985.1, p. 1]

Increasing automobile efficiency is an important, and long-overdue, step towards improving the sustainability and security of our energy enterprise. Improving the efficiency of the national fuel economy standard is a short-term, relatively inexpensive, and effective way of reducing greenhouse gas emissions. Cars emit approximately a quarter of overall emissions, and automotive efficiency has actually fallen over the last two decades. Your initiative is an important step not only in making our nation more sustainable, but it will help reduce our dependence on foreign oil, which represents the vast bulk of our imported energy. We also applaud the decision to standardize the policy nationwide and send the appropriate market signals necessary for industry capital investments. [OAR-2009-0472-3985.1, p. 1]

Again, thank you for your forward-thinking policy. As America's oldest and largest scientific society, we look forward to working with you to ensure America's sustainability. [OAR-2009-0472-3985.1, p. 1]

American Council for an Energy Efficient Economy

ACEEE applauds USEPA and NHTSA for taking the enormous step towards energy security and environmental protection that this joint rulemaking represents. The proposed rule offers very substantial increases in fuel economy and reductions in vehicles' greenhouse gas emissions.

The rule also reflects important analytical improvements over the approach taken in previous rulemakings, especially the more thorough and transparent analysis of the technical potential to reduce emissions and fuel consumption, and the associated costs. In addition, the agencies' use of a publicly available data set fully describing the reference fleet, rather than confidential manufacturer product plans, to develop the rule allows the public to understand in detail the basis for the standards. [OAR-2009-0472-7260.1, p.1]

[ACEEE also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, pp. 138.]

American Lung Association of California

The American Lung Association in California applauds the Obama administration for this truly historic agreement to adopt rules that mirror California's clean air standards and move the nation forward toward a cleaner transportation future.

The joint proposal by EPA and NHTSA to establish greenhouse gas vehicle standards and improve fuel economy in motor vehicles across the nation is an important step in the fight against global warming, air pollution, and the serious public health impacts of petroleum consumption.

The American Lung Association of California urges the federal EPA to move forward to adopt the proposed clean air standard and to adopt the strengthening changes recommended by the California Air Resources Board today.

These recommendations include, one, adding an automaker-specific backstop to ensure that the expected level of greenhouse gas emission reductions are achieved; and, two, to ensure that credit calculations for electric- or hydrogen-powered vehicles include upstream emissions.

In the future, the American Lung Association would also urge EPA to adopt additional measures to tighten vehicle tailpipe standards for smog-forming pollutants.

[ALAC submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-7283, pp. 39-44]

Association of International Automobile Manufacturers (AIAM)

AIAM and our member companies fully support a single national program to address these two overlapping programs, and we commend the agencies for their efforts to develop a harmonized program as much as possible. We look forward to working with the agencies as you finalize this rulemaking early in 2010. [OAR-2009-0472-7123.1, p.1]

The core element of these proposals is for EPA and NHTSA to each separately adopt standards under each agency's enabling statute that will be of roughly equivalent stringency. The goal is, to the extent possible, to craft standards that would "allow auto manufacturers to build a single national light-duty fleet that would comply with both the GHG and the CAFE standards." Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFE Standards, 74 FR 24007, 24009 (May 22, 2009). AIAM supports this proposal and agrees that doing so is consistent with both the Clean Air Act and EPCA. [OAR-2009-0472-7123.1, p.4]

These NHTSA/EPA proposed regulations are an important step in implementing the new, harmonized national program for regulating motor vehicle fuel economy and greenhouse gas emissions that was announced by the Obama Administration on May 19, 2009. [OAR-2009-0472-7123.1, p.19]

[AIAM also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-7283, pp. 28-32]

Bieling, Andrea

I applaud the Environmental Protection Agency and the National Highway Traffic Safety Administration for proposing standards that will make our cars and trucks cleaner and more efficient. The proposed rules will help realize President Obama's historic commitment, saving 1.8 billion barrels of oil and $193 billion in consumer gasoline costs, and significantly reducing our global warming emissions.

I applaud the Environmental Protection Agency and the National Highway Traffic Safety Administration for proposing standards that will make our cars and trucks cleaner and more efficient. The proposed rules will help realize President Obama's historic commitment, saving 1.8 billion barrels of oil and $193 billion in consumer gasoline costs, and significantly reducing our global warming emissions.

I strongly support cleaner cars and thank the Administration for proposing standards that are a win for consumers, automakers, and the environment alike. Strong final rules will launch vehicle standards into the 21st century, help make Detroit a leader in green vehicles, laying a strong foundation for the cleaner vehicles we need to significantly reduce our reliance on oil and curb global warming. [OAR-2009-0472-8704 p.1]

BiotectConnect, Inc.

I fully support efforts to improve fuel efficiency. [OAR-2009-0472-7203, p.1]

BMW of North America, LLC (BMW)

The proposal will permit auto manufacturers to build a single light-duty national fleet, satisfying the requirements of each agency program. In keeping with our corporate commitment to reducing greenhouse gases, BMW commends both EPA and NHTSA for listening to and collaborating with auto makers in their efforts toward developing this complex proposal covering model years 2012 through 2016. Additionally, we commend the State of California Air Resources Board for their collaboration with EPA and NHTSA toward a single national standard that includes their aggressive targets. [OAR-2009-0472-7145.1, p.1]

In order to provide product planning certainty for the auto industry, while continuing to reduce greenhouse gas emissions and improve fleet fuel economy, BMW strongly recommends a comparable collaboration toward a national program in the model years beyond 2016. This would also help ensure wise financial and resource investments, as well as increased energy security for the nation. [OAR-2009-0472-7145.1, p.1]

Now, in keeping with our corporate commitment to reducing greenhouse gases, we commend both the U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration for their enormous efforts in developing this complex proposal that will permit auto manufacturers to build a single light-duty national fleet which will satisfy the requirements of each agency's program. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 131.]

BorgWarner

BorgWarner would first like to commend the EPA, NHTSA and the State of California for their combined efforts to harmonize the standards in this very thorough joint proposal. [NHTSA-2009-0059-0076, p.1]

BorgWarner is very supportive of EPA, NHTSA and the State of California's efforts and sees the joint proposal as a major step forward in our desire for energy independence and reduced CO2 emissions. [OAR-2009-0472-7289, p.3]

Bright Automotive

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283 p.175]

So we're here to support this and say that there are innovators in this country ready to meet this challenge, and so we fully support the joint and harmonized regulations. I'm not here to comment on whether it's sufficient, but it's definitely necessary.

Another thing we'd like to say is we also believe in the business model that is proposed in the regulation, that this will actually save significantly more money than it will cost.

California Air Resources Board

CARB strongly supports the joint proposed action, most importantly the stringency of the greenhouse gas emission standards as proposed for each year in the 2012 through 2016 model years. Those standards align very well with California's adopted and now enforceable Pavley greenhouse gas emissions standards for those model years, ultimately arriving at the same stringency as California's standards in 2016. The proposed standards are the result of the agencies' thorough review and study of technical, engineering, and cost studies and a reasonable weighing of their respective statutory directives. The proposal also contains several provisions that will help to ensure no credit windfall occurs that could undermine the standards and reduce their cumulative greenhouse gas reductions. However, CARB has two critical concerns, stringency and the upstream emission factor for zero-emission vehicles (ZEVs), which must be addressed in the Final Rule to ensure California's continued support for the National Program. Other CARB concerns and responses to questions posed by EPA and NHTSA then follow. [OAR-2009-0472-7189.1, p.1]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-7283, pp. 21-27]

California State Senate

I applaud the Obama Administration for forging a truly historic agreement to increase fuel economy and set the nation's first greenhouse gas standard for new passenger cars and light trucks. The National Clean Vehicles Program, using separate, but complementary fuel economy and tailpipe greenhouse gas emission standards, is set to achieve a fleetwide average of an equivalent 35.5 miles per gallon by model year 2016. [OAR-2009-0472-7275.1, p.4]

[Fran Pavley also submitted these comments as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, pp. 13-20]

Cambell, Bruce

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, p.199]

And I support the Obama, EPA, NHTSA call for considerably better gas mileage. And I urge that you get as clean a rule as possible without complicated carbon credit loopholes and moving-the-problem-around type thing.

So please proceed with as clean as possible around 35 miles per gallon and then improve from there.

Chamber of Commerce of the United States of America

The U.S. Chamber of Commerce strongly supports reducing emissions from automobile tailpipes. The Chamber supports improving vehicle fuel economy to 35.5 miles per gallon, a standard that will also reduce vehicle greenhouse gas emissions to 250 grams of CO2 per mile. The Chamber has serious concerns, however, with the regulatory framework through which EPA intends to achieve these goals. [OAR-2009-0472-7233.1, p.1]

Chew, Yuli

Though the results from the use of the MAGICC model only shows small, but quantifiable, reductions in the atmospheric CO2 concentration, , I support EPA's efforts of regulating the greenhouse gas from vehicles no matter how insignificant the benefits will be. In the Supreme Court's decision ion MASSACHUSETTS ET AL. v. ENVIRONMENTAL PROTECTION AGENCY ET AL. on April 2, 2007, it noted: "Agencies, like legislatures, do not generally resolve massive problems in one fell swoop, ..., but instead whittle away over time, refining their approach as circumstances change and they develop a more nuanced understanding of how best to proceed, ... That a first step might be tentative does not by itself negate federal-court jurisdiction. And reducing domestic automobile emissions is hardly tentative. Leaving aside the other greenhouse gases, the record indicates that the U. S. transportation sector emits an enormous quantity of carbon dioxide into the atmosphere. " [OAR-2009-0472-7042.1, p.5]

I believe that the 2003 Kahane Study (in which NHTSA adopted) for 1995 – 1998 Model Year cars and 1995 – 1997 trucks, in which all 2-door cars, or 20% of registered vehicles were excluded was statically biased. The information was based on outdated technologies, bad rollover rates for trucks at that time. It should be reviewed along with 2005 DRI Study (DRI-TR-05-01). In "Increasing the Fuel Economy and safety of New Light-Duty Vehicles" by Lawrence Berkeley National Laboratory on September 18, 2006, the final conclusion was "However, recent research indicates that mass is merely a proxy for other characteristics that are more important for crashes between cars and trucks, such as frontal heights and stiffness." [OAR-2009-0472-7042.1, p.5]

Chrysler Group LLC (Chrysler)

Chrysler supports the efforts of the United States Environmental Protection Agency ('EPA') and the National Highway Traffic Safety Administration ('NHTSA') to establish a National Program for the regulation of vehicle greenhouse gas emissions and fuel economy. As EPA and NHTSA have noted, the National Program 'hold[s] out the promise of delivering environmental and energy benefits, cost savings, and administrative efficiencies that might not be available under a less coordinated approach. The efforts to craft standards have largely succeeded in 1) harmonizing Corporate Average Fuel Economy ('CAFE') and vehicle greenhouse gas emissions ('GHG') attribute-based standards; 2) replacing state standards with a single federal standard; and 3) focusing on performance requirements rather than technology mandates. The rules proposed by this NPRM for the 2012-2016 model years ('MY') will reduce greenhouse gas emissions, enhance energy security, and offer greater regulatory certainty for vehicle manufacturers. [NHTSA-2009-0059-0124, p.1]

Chrysler strongly believes that a single national fuel economy and greenhouse gas program will place more clean and efficient vehicles on the road quickly and at lower costs. Our resources are best utilized when applied to one, single, national standard versus differing state-level fuel economy and greenhouse gas requirements. [NHTSA-2009-0059-0124, p.1]

The proposed rules are an important step towards the achievement of the goals of the National Program. They reflect the substantial efforts that EPA and NHTSA have made to provide 'consistent, harmonized, and streamlined requirements. EPA and NHTSA have recognized that those efforts are complicated by the fact that EPA and NHTSA have different authorizing statues with requirements that are not identical. The primary effect of those differences is that EPA can grant some compliance flexibilities - for example, in trading credits - that NHTSA cannot. As a result, the joint standards themselves cannot be identical, but 'the goal is providing regulatory compatibility that allows auto manufacturers to build a single light-duty fleet that would comply with both the GHG and the CAFE standards.' [NHTSA-2009-0059-0124, pp.1-2]

Chrysler agrees that regulatory compatibility is an important and achievable goal. If the regulations are wholly compatible. a fleet that complies with the GHG rules will also comply with the CAFE standards. In these comments. Chrysler suggests some changes to ensure that the final rule will meet the goal of regulatory compatibility. We believe that these changes can be accommodated in the final rule without compromising the environmental goals of the National Program. We will continue working with EPA and NHTSA to ensure these and our other concerns are resolved. [NHTSA-2009-0059-0124, p.2]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 46-48]]

We believe it's important to observe that the 2016 model year standard of 250 g/mi carbon dioxide or 35.5 mpg represent an historic and unprecedented challenge for our industry. Translating this into more easily understood terms, this is a 10 mpg or 40 percent increase in the entire fleet's fuel economy from today's level within six years.

Chrysler confirmed support for this historic program in the May 19th, 2009 White House ceremony with President Obama. Our current CEO, Sergio Marchionne is also the CEO of Fiat,

the fuel economy leader in Europe. He understands and endorses these commitments and is determined to implement the product actions necessary for Chrysler to meet those 2016 standards. In fact, Chrysler and Fiat continue to progress towards those product actions, and work is already underway on developing new environmentally friendly, fuel-efficient, high quality vehicles that we intend to become the hallmark of Chrysler's product line.

We have significantly revised our five-year plan to meet these new standards. Chrysler's compliance requires successful application of a broad range of technologies from advanced technology ICE all the way through electrification in an unprecedented time. This means that Chrysler's vehicles will adopt Fiat's world-class technology, platforms and powertrains for small and medium sized vehicles, allowing us to offer an expanded product lineup including environmentally friendly vehicles with these rules and, also, by increasing demand to consumers.

One type of technology is multi-air technology, an electrohydraulic variable valve lift system for internal combustion engines. It controls air flow and combustion cylinder by cylinder, stroke by stroke, improving both fuel efficiency and performance in our engines.

Chrysler is also working with the Department of Energy to improve the commercial viability of our plug-in hybrid programs through the electrification grant that we received earlier this year.

In addition to these steps that are primarily powertrain efficiency actions, Chrysler will also continue to lessen the vehicle energy demands through actions such as improved aerodynamics, reduced loading resistance, and also material substitution, lightweighting while maintaining overall strength and safety of our products.

Chrysler believes that reducing vehicle mass without reducing the size of the vehicle or the structural integrity is technically feasible in the rulemaking time frame on these products.

Clarke, Darrell

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283 p.187]

I'm just going to say for starters this is only the most important step for us to take as a nation about global warming and oil dependence. To put it rather succinctly, I'll point to some charts. [The commenter provides extensive testimony unrelated to the ruling]

Clean Energy Fuels

Clean Energy supports GHG regulation of motor vehicles and would like to thank both EPA and NHTSA staff for their hard work and foresight used in the development of this important rulemaking. [OAR-2009-0472-7220.1, p.5]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, p. 141.]]

And I'd like to say there's a lot of hard work put into this rulemaking, and we appreciate it. We're very supportive of, you probably are new to our company, Clean Energy, we are mostly a California -- although we are nationally based, but we are extremely supportive of EPA's efforts to curb greenhouse gas emissions in the transportation sector, and we are just looking for ways that we can get to the same conclusion with more flexibility, using low carbon fuels and, also, seeing if there are ways to combine efficiency strategies with our technology as well. We believe that ultimately by employing progressive strategies like bio-methane, hybrid drivetrains, plug- in hybrid drivetrains, we can achieve 2015 emission targets for greenhouse gases.

[[Clean Energy also submitted these comments as testimony at the Detroit public hearing, See docket number OAR-2009-0472-6185, p. 131.]]

Coalition for Clean Air

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.134-137]

That is why today we applaud the Obama administration for forging a historic agreement with industry to adopt rules that mirror California's groundbreaking Clean Cars Law.

When we adopted our standards in 2004, we knew that automakers could make clean cars that consumers want and need. We are confident that they will devise ways to make even cleaner cars in the future.

So given California's dire need to continue improving our air quality, we cannot take our chances and assume that after President Obama's administration or administrations, we will have other administrations who agree with us in the need to reduce global warming gases specifically here in California.

And having said that, we cannot rely on others out of the state to protect our residence, our children, our families, and our workers.

Consumer Federation of America

THE IMPORTANCE OF THIS GROUNDBREAKING RULEMAKING In many ways, this is the most important change in the Corporate Average Fuel Economy (CAFE) program since its inception three and a half decades ago.

• This rulemaking unifies the regulation of the energy and environmental standards for motor vehicles in the U.S.

• It embodies one of the largest increases in fuel economy over a four-year period in the history of the program.

• It resolves a major dispute over federal and state shared authority by ordering improvements in the environmental impact of automobiles, and thereby preserving the most important dynamic characteristics of federalism.

• It is based on a consensus agreement that includes the automakers.

• It incorporates new methodology for analyzing potential CAFE and greenhouse gas emissions standards that is more transparent, replicable, and accurate than the prior methodology.

At the same time, this rulemaking reflects the fact that it is a transition regulation that demands a more effective process for setting fuel economy standards in the future.

• The transition requires the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) to harmonize and reconcile their statutes.

• The rulemaking recognizes the dire circumstances of the auto industry and allows it some breathing space to redefine itself and retool before a more rigorous and demanding regime of fuel economy improvement is required. Thus, the ultimate success of this landmark rulemaking will be in the framework of standard setting that it creates for the future. There are many critical issues that will have to be resolved in order to ensure that the standard setting process provides the maximum benefits for consumers, the nation and the environment.

[[Consumer Federation of America also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 104-105.]]

County of Greenville, SC

We commend the EPA and the NHTSA for working together to develop a rule that will result in significant improvements in fuel economy. Our nation needs reduced emissions and energy security and we support these goals. In addition to reducing greenhouse gas emissions, improving fuel economy will have the very important benefit of reducing emissions of air pollution . These reductions will help areas meet the 2008 or a new national ambient air quality standards resulting from the revisions currently underway at EPA for pollutants including ozone and particulate matter 2.5 and will also reduce urban air toxics . This will have a very positive impact on public health and the environment. [OAR-2009-0472-8346 p.1]

As such, we support NHTSA moving forward at this time with the CAFE standards as proposed. It is important to note that virtually all of the greenhouse gas emission reductions and air quality benefits will occur from the new CAFE standards proposed by NHTSA. [OAR-2009-0472-8346, p.1]

Cummins Inc.

Cummins Inc. ("Cummins") supports the proposed joint rulemaking by the National Highway Transportation Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) to reduce greenhouse gas (GHG) emissions and improve fuel economy of new cars and

light-duty trucks sold in the United States. Cummins is committed to help meet these goals in vehicles powered by our engines. Cummins is also working closely with the National Academy of Sciences (NAS) on developing a framework for a fuel efficiency improvement and GHG program for heavy-duty commercial vehicles in the United States. We view the development of technology and responsible regulations as one of our core corporate responsibilities. [OAR-2009-0472-7205.1, p.2]

Cummins supports the overall framework of the proposed regulation by EPA and NHTSA to harmonize the agencies' programs. However, Cummins urges EPA to take a more holistic approach that reflects upstream CO2 impacts in the development of GHG emission standards. [OAR-2009-0472-7205.1, p.2]

Dewey, Scott

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283 p.149-159]

It would be hard to overemphasize the importance of this issue for our nation and the world. Our survival as a species may actually depend on it, getting global warming under control. Unfortunately, for various political reasons, we are about 20 years late in developing policies to confront global warming. The problem has grown larger in the meantime, meaning it's particularly critical that we now act swiftly and effectively to confront this problem. It really is urgent.

By reducing oil consumption and importation, by reducing greenhouse gas emissions, and by reducing motorists' fuel costs, the President's national program will enhance national security, energy independence, and economic stability, making us less vulnerable to energy price shocks and supply disruption while also helping to control the number one global environmental threat. It's the proverbial win-win. It's not the total answer to the whole complicated problem, but it's a good start.

Eadie, R. Frank

The -- so we're more than grateful to see the EPA at very long last and, you know, it's -- I can't count the number of years that I've been involved in promoting better CAFE standards for the country, and it's -- you know, I'm really, really grateful that finally the President has decided that we're going to have that happen, at least -- and we want to make sure that it does happen, so let me applaud that standard over miles per gallon and that's a giant, a real important change, it probably is not nearly [OAR-2009-0472-4621, p.169] enough, but it's a major improvement, and it's something that we're all very grateful for the President's action and your following up on it. [OAR-2009-0472-4621, p.170]

Ecology Center

The Ecology Center is pleased to be here today and to provide support for the proposed rule making to establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. [OAR-2009-0472-4068,p.1]

The Ecology Center has for many years been an advocate for strong fuel economy standards for cars and light trucks. But we have also advocated that such standards be developed in a way that helps advance new investments in U.S.-manufacturing, protects jobs, and fairly distributes the costs across the industry. We believe this approach is the best way to achieve a sustainable policy that builds public support while also protecting the environment and improving energy security. [OAR-2009-0472-4068,p.1]

The Ecology Center committed itself to these ideals when it created a special project called the Green Machines Tour, which was aimed at building public awareness about the many positive benefits of new investments in advanced fuel economy technologies. We focused on the auto producing region here in the Midwest, and spent many hours on the road speaking with community members, union leaders, and elected officials about the fuel-efficient technologies that were either already being used in today's vehicles, or that were on the drawing boards, and how they were helping their communities. We identified billions of dollars in new or planned investments, and the creation or retention of thousands of auto sector jobs. We also discussed how new policies to require improved vehicle fuel economy could help ensure even greater opportunities for new jobs and economic development in this vital industry. [OAR-2009-0472-4068, p.1]

Almost without exception, the people we talked with were in support of advancing new fuel economy policies. However, they did want assurances that the rules would be developed in a way that was fair for their community and their industry, and that protection of existing jobs would be strongly considered. [OAR-2009-0472-4068, p.1]

In summary, the Ecology Center supports the proposed rules and believes that they achieve the desired balancing of interests for fairness and cost-effectiveness, while also requiring significant and meaningful reductions of CO2 emissions and petroleum use. It is our hope that these new rules can help to set the U.S. automobile industry on a new course for success-at least in terms of improved fuel economy. [OAR-2009-0472-4068, p.2]

Environment Michigan

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 64-67.]]

The administration deserves great credit for taking this historic step to cut global warming pollution, make America more energy independent, and help make Detroit a leader in clean vehicle technology. We applaud the administration's overall effort and your individual contributions.

I'll make three main points in my testimony. First, oil dependence and global warming are urgent and interrelated problems that demand bold policy solutions. Second, this proposal is a

good first step but must be strengthened to meet President Obama's goals for reducing pollution and saving oil. And, third, the proposal is evidence that the Clean Air Act works in addressing global warming pollution.

America is at an energy crossroad. As a nation, we are heavily reliant on oil and other fossil fuels at a time of growing demand and dwindling supply. Our dependence on fossil fuels continues to impose massive environmental, economic, and security costs. Now our country must choose between paying to continue the status quo and investing in a clean energy future.

America spends nearly $1 billion each day importing oil. Those funds are a direct transfer of wealth from America's pocketbooks to oil companies and foreign governments. These figures do not include the untold damages to our environment, health, and security resulting from the production and use of oil. A report released this week by the National Academies of Sciences quantifies just a portion of these damages; it estimated that energy use in motor vehicles produced $56 billion in health and other nonclimate-related damages in 2005 alone.

Light-duty vehicles alone account for about 40 percent of all U.S. oil consumption.

At the same time, pollution from the production and use of oil is a leading source of air pollution, water pollution from spills, and global warming pollution.

With respect to global warming, the impacts on human and natural systems are now being observed nearly everywhere. In 2007, the Nobel Prize- winning U.N. Intergovernmental Panel on Climate Change predicted serious risks and damages to livelihoods, human infrastructure, societies, species, and ecosystems unless future warming is substantially reduced. So far this decade emissions, warming, and impacts, such as ice melt and sea level rise, have all been at the upper end of IPCC projections.

To meet the challenge of global warming, we must transform the ways America and the rest of the world produce and use energy, achieving dramatic improvements in the efficiency with which we use energy in our vehicles, homes, and businesses and moving to clean, renewable energy, such as wind solar power.

This challenge also brings enormous opportunity. Vastly improving the efficiency of our economy and moving to renewable energy will reduce our dependence on oil, help revive our economy, and create millions of green-collar jobs in many fields, including in the auto industry.

Mobile sources emitted more than 30 percent of all U.S. global warming emissions in 2006 and have been the fastest-growing source of U.S. global warming emissions since 1990. Light-duty vehicles are responsible for nearly 60 percent of all global warming emissions from mobile sources.

As a first step to address America's oil dependence and global warming, these proposed vehicles standards are a good beginning. The proposal will raise the fuel economy of the passenger vehicle fleet to an average of 34.1 by 2016, accelerating the goals in the 2007 energy bill by four years. In addition, the proposal sets the first-ever Federal standards to reduce global warming

emissions from new passenger vehicles -- requiring a fleet average of 250 grams carbon dioxide equivalent per mile in 2016. Importantly, these standards establish a foundation for more stringent standards in the future that will do even more to curb global warming and to wean the country from its dependence on oil.

The proposal makes clear that auto manufacturers can meet these proposed standards by utilizing technologies that are already available today. Requiring the more widespread adoption of clean technologies will help spark the technology innovation necessary for automakers to successfully compete in the global economy and thereby contribute to a strong local and domestic economy.

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 69-70.]]

Finally, I want to point out that this proposal is strong evidence that the Clean Air Act is effective in addressing global warming pollution from vehicles.

The Clean Air Act allows California to set auto emission standards that are stronger than Federal standards and other states to adopt California's auto emission standards. Over the last 40 years, California has consistently demonstrated leadership in developing and implementing standards to curb pollution from motor vehicles, as is the case with the state's first-of-their-kind standards to reduce global warming emissions from new vehicles.

Thirteen other states and the District of Columbia adopted these California standards representing about 40 percent of the light-duty market. And the states' program gave rise to the proposal that is before us today.

We applaud the states that spearheaded the drive for cleaner cars. We wouldn't be here today if it weren't for their trailblazing efforts to reduce our oil dependence and curb global warming.

This process worked for conventional pollutants, and it works for the pollutants that are fueling global warming.

In closing, we commend the administration for proposing these historic standards to reduce global warming pollution, make America more energy independent, and help our country regain its edge as a technology leader. We urge you to strengthen and finalize the rule.

Environment New Jersey

I definitely appreciate the opportunity to testify today. The Obama Administration deserves great [OAR-2009-0472-4621, p.66] credit for taking this historic step to cut global warming pollution, to make this country more energy independent and finally to make America a leader in clean vehicle technology. We applaud the Administration's overall effort and your individual contributions. [OAR-2009-0472-4621, p.67]

Environmental Defense Fund

I. THE PROPOSED STANDARDS ARE A VITAL STEP IN FORGING COMMON GROUND AMONG DIVERSE INTERESTS AND MOVING THE NATION FORWARD TO ADDRESS GREENHOUSE GASES AND IMPROVE FUEL ECONOMY.

There are dual national security benefits from EPA's proposed action: reducing America's reliance on foreign oil and beginning to address climate-disrupting emissions that will exacerbate geopolitical instability. Military experts have pointedly recognized these dual policy imperatives. A report commissioned by the Pentagon states that "It is quite plausible that within a decade the evidence of an imminent abrupt climate shift may become clear and reliable. . . . Disruption and conflict will be endemic features of life." Commander Jeffrey W. Eggers, former director for combating terrorism at the National Security Council, stated that "the seemingly intractable problem of U.S. dependence on foreign oil is a pre-eminent national security threat . . . ." A CNA Military Advisory Board report came to a similar conclusion, finding that "[o]ur dependence on foreign oil reduces our international leverage, places our troops in dangerous global regions, funds nations and individuals who wish us harm, and weakens our economy; our dependency and inefficient use of oil also puts our troops at risk." The Government Accountability Office has also sounded the alarm, warning that "without dramatic change, the nation will become ever more reliant on imported oil and natural gas with attendant threats to national security." [OAR-2009-0472-7285.1, pp. 3-4]

The national security risks created by heavy dependence on foreign oil require broadscale changes throughout the economy. Speaking before the Senate Foreign Relations Committee, Retired Vice Admiral Dennis McGinn declared: Energy security and a sound response to climate change cannot be achieved by pursuing more fossil fuels. Our nation requires diversification of energy sources and a serious commitment to renewable energy. Not simply for environmental reasons—for national security reasons. [OAR-2009-0472-7285.1, p. 4]

As our military leaders have noted, "[o]ur only choice is whether we're going to make the decisions [on reducing our dependence on oil] forcefully and in a timely manner. We could lag and then we'll find ourselves in a much more serious situation, when all of these other costs come on us." [OAR-2009-0472-7285.1, p. 4]

The cost of delaying action is high: "We will pay to reduce greenhouse gas emissions today . . . [o]r we will pay the price later in military terms. And that will involve human lives." The proposed regulations are an important part of necessary, immediate action to reduce emissions. "Each of us can help end America's addiction to oil. Using less fuel in our cars and trucks reduces overall demand . . . . These steps, taken individually, may seem small. Collectively, they can make us more secure." [OAR-2009-0472-7285.1, p. 4]

[Following comments are from LA Testimony, OAR-2009-0472-7283 p.72-79]

There is good reason for hope. The proposal for cleaner cars at issue today represents an important step forward in addressing the grim impacts of a changing climate, but to secure these critical benefits, the final standards must be rigorous and well designed. We examine some elements of the proposal that warrant close attention.

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 114-117]]

America is a vast and diverse nation. But despite our differences, we are united by unyielding and common bonds. We are united in a commitment to our nation's security. We stand together in our quest to realize a shared prosperity for all Americans. And we are steadfast -- as a nation of mothers, fathers, grandparents, uncles and aunts -- in our vigilance for a safe and healthy future for America's children.

On May 19th the President of the United States charted a path forward for our nation that ended years of discord and division. The President forged an accord on cleaner cars to begin breaking our addiction to foreign oil, to pioneer the clean energy technologies that will lead the way in the 21st Century global marketplace, and to start reducing the global warming pollution that imperils our planet.

We sincerely thank the President and the leaders in labor, business, and state government who worked together to break this logjam -- the United Auto Workers, the Alliance of Automobile Manufacturers, and the numerous states involved from California to Maine.

By virtually any metric, the benefits of the EPA and Department of Transportation proposal to implement the Presidential accord measure up.

The proposed standards strengthen our national security. The vehicles subject to these proposed standards are responsible for about 40 percent of all U.S. oil consumption. The standards would reduce our consumption of oil by 1.8 billion barrels while achieving a 5 percent annual improvement in fuel efficiency for the nation's passenger vehicle fleet.

The proposed standards reduce global warming pollution from a significant and rapidly rising sector. The vehicles covered by the proposed standards account for 60 percent of heat-trapping emissions from the transportation sector and about 20 percent of all U.S. heat-trapping gases. These emissions have steadily increased by more than 1 percent annually. The EPA estimates the proposed standards would cut carbon dioxide pollution from passenger vehicles approximately 21 percent by 2030, reducing emissions by 950 million tons.

The proposed standards will provide dividends in fuel savings at the pump for America's families. The estimated overall cost savings over the life of the vehicle are more than $3,000. And families who finance a new vehicle purchase are expected to save estimated $12 to $14 a month over the duration of the loan.

While these numbers mark progress for our nation, the benefits of the proposed standards are far-reaching in their measure.

The proposal embodies the first national standards to limit global warming pollution. We applaud the President and the leadership at the Environmental Protection Agency for taking landmark steps to reduce heat-trapping gases and for following the law enunciated by the United States Supreme Court.

The proposal weaves the innovative state clean car programs, the nation's clean air laws, and the nation's fuel economy laws into a single national policy that reduces global warming pollution and improves fuel efficiency through the clarity and certainty of an integrated program.

The proposal provides compliance flexibility that will ensure consumers will have a full range of vehicle choices.

And while the proposed standards can be achieved with today's available technologies, the proposal also lays the foundation for new innovative technologies that will pave the way for additional progress in the next phase of clean car standards. And it is these advanced clean car technologies that will position our nation as a leader in the global economy.

We recognize the challenges ahead in completing this proposal to ensure a rigorous and balanced outcome. Environment Defense Fund, respectfully, will submit written comments offering our recommendations to ensure the final standards are protective and well-designed. The fundamental promise of the Presidential accord and the charge for the Environmental Protection Agency and Department of Transportation in finalizing the proposed standards -- is to strengthen our nation's common bond by uniting America to achieve profound and lasting progress in national security, climate stability and economic opportunity. We hope this policy initiative is the first of many steps in realizing that promise.

[Environmental Defense Fund also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 118-119.]

Epps, Jennifer

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.205-206]

I think we desperately need clean, fuel-efficient vehicles, and I think we deserve them. Taxpayers fund the construction of roads and highways. We fund the maintenance of those roads and highways. We fund the administration of them through the DMV. We fund the policing of them.

So I think it's high time; we've waited long enough. Automakers have been dragging their feet for about 25 years, and these new proposals would be the first serious improvements to fuel economy in two decades.

Ford Motor Company

Ford supports the overall manner in which the agencies have proposed to harmonize the greenhouse gas emissions and CAFE regulatory framework. The proposal brings together a range of compliance mechanisms such as improvements to vehicle fuel economy, improvements in air-conditioning systems designed to minimize refrigerant leakage (another potential source of greenhouse gases) and advanced technology vehicles that can run on biofuels and electricity. Taken together, the broader elements of this harmonized national program provide a more

efficient compliance framework compared to individual state programs or potentially overlapping federal and state programs. [OAR-2009-0472-7082.1, Cover letter, p. 1]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.90-96] [Following comments are also from Detroit Testimony, OAR-2009-0472-6185 p.13-17] [Ford also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, pp. 26-31.]

We commend the efforts of both agencies in this difficult task to develop harmonized greenhouse gas emissions and CAFE standards for passenger cars and light-duty trucks, and we are committed to working with you to finalize these regulations.

Turning now to the proposed rulemaking, Ford supports the manner in which the agencies have proposed to harmonize the greenhouse gas emissions and CAFE regulatory framework which is a broader program compared to what was outlined in the 2007 Energy Independence and Security Act.

It brings together a range of compliance mechanisms such as improvements to vehicle fuel economy, improvements in air-conditioning systems designed to minimize refrigerant leakage, another potential source of greenhouse gas emissions, and advanced technology vehicles that can run on biofuels and electricity.

It also maintains separate car and truck footprint-based targets which Ford and the industry have supported given that cars and trucks have different functional characteristics whether they have the same footprint or not.

Taken together, the broader elements of this one national program provide a more efficient compliance framework compared to individual state programs or potentially overlapping federal and state programs.

General Motors

GM supports the joint proposal from EPA and NHTSA to address 2012 to 2016 model year vehicles. We commend the technical staffs of both agencies with working together on this highly complex issue to produce what appears to us to be a very harmonized approach with the two Federal programs that will regulate fuel economy and greenhouse gas emissions. We also want to thank the agencies for leadership that the Federal Government is showing in trying to minimize the disruptive impacts of having multiple programs at State and Federal levels. (OAR-2009-0472-6185, p.10)

It is our view that this rule represents a dramatic opportunity to advance our mutual goals of CO2 reduction and increased energy diversity while respecting customer choice. But even after this rule is finalized, more work will remain on the policy front. This rule only gets us to 2016. (OAR-2009-0472-6185, p.12)

We do urge both EPA and NHTSA to keep all stakeholders at the table and immediately begin work on the next phase of what we would call an ongoing national strong program. And I will tell you right now from a GM perspective, we are prepared to engage in that process today. (OAR-2009-0472-6185, p.12)

General Motors (GM) supports the joint proposal from EPA and NHTSA to address the fuel economy and greenhouse gas emissions of 2012-2016 model year vehicles. The proposal is consistent with the intent of the May agreements with the administration. We commend the technical staffs of both agencies for working together on this highly complex issue, and appreciate their efforts to produce a harmonized approach for federal regulation of vehicle fuel economy and greenhouse gas emissions. We further commend the agencies for the leadership that the federal government has shown in trying to minimize the disruptive impacts of having multiple programs at the federal and state levels. While this rule represents a dramatic opportunity to advance our mutual goals of CO_2 reduction, increased energy diversity and respecting customer choice, even after this rule is completed, more work will remain on the policy front. We urge both EPA and NHTSA to move quickly to keep all stakeholders at the table and work on the next phase of an ongoing, strong National program. All voices -- the states, the automakers, the environmental organizations, and the energy providers -- are essential for this to happen. Ultimately, we will need strong leadership at the federal level with an integrated and coordinated approach that addresses infrastructure, vehicles, fuels and consumer behavior, as well as all other sectors of the economy. This proposal is a positive first step and a good foundation on which we can all build, but we cannot rest on our laurels. [OAR-2009-0472-6953.1, pp.2-3]

[The following is from LA Testimony, OAR-2009-0472-7283, pp.55-59]

First, let me underscore that GM supports the joint proposal from EPA and NHTSA to address the 2012 to 2016 model year vehicles. We commend the technical staffs of both the agencies for working together on this highly complex issue to produce what appears to be a very harmonized approach for the two federal programs that will regulate vehicle fuel economy and greenhouse gas emissions.

We also want to thank the agencies for the leadership that the federal government is showing in trying to minimize the disruptive impacts of having multiple programs at both the federal and state levels. We are especially pleased that we are able to testify today in support of the approach that is being proposed rather than saying no to a patchwork of state programs.

Among the highlights of the proposal are, one, the coordinated attribute-based approach of the two programs; and, two, the recognition of the need for mechanisms that provide for compliance flexibility in the face of uncertainty over future technology developments and costs, customer acceptance of these technologies, and the price of fuels that consumers may see in the marketplace.

This proposal is a positive first step and a good foundation on which we can all build, and GM intends to provide some detailed technical written comments to enhance the clarity and harmonization of this joint effort and program. And as we have from the start, we just would like

to reiterate our commitment to working with the agencies, the states, and other interested parties to make this a success.

Georgia Department of Natural Resources

We commend the U.S. Environmental Protection Agency (EPA) for working closely with the National Highway Traffic Safety Administration (NHTSA) to develop a rule that will result in significant improvements in fuel economy. Our nation needs energy security and reduced emissions and we support these goals. [OAR-2009-0472-7150.1, p.1]

Glasser, Mark

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.201-205]

And so I bring these personal things up just to note the importance of what you're doing and the wonderful job that has been started here, and I do thank you guys for coming here and for listening to all of us.

Honda Motor Company

American Honda Motor Co., Inc. ("Honda") appreciates the efforts made by EPA and NHTSA to develop a single national program to address motor vehicle greenhouse gas emissions and fuel economy and welcomes the opportunity to provide its comments on the Notice of Proposed Joint Rulemaking (the "NPRM"), dated September 28, 2009. [NHTSA-2009-0059-0095.1, p.2]

Honda supports the overarching goal of the NPRM, which is to establish a "coordinated and harmonized approach" to implementing the Clean Air Act's mandate that EPA regulate motor vehicle emissions, and the mandate in the Energy Policy and Conservation Act (EPCA) that NHTSA regulate motor vehicle fuel economy. [NHTSA-2009-0059-0095.1, p.2]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.96-103]

This NPRM represents a significant, positive step forward, and we appreciate the efforts of everyone involved to create more harmonized national standards. Honda has long advocated for higher fuel economy standards and, by inference, lower greenhouse gas emissions as well as a single national standard.

Until the White House agreement, the automobile industry was facing fragmented, conflicting, and burdensome regulation of fuel economy and greenhouse gases. The regulations in California and adopted by 12 states and the District of Columbia compared to NHTSA's CAFE regulations differed in terms of testing requirements, vehicle category definitions, and stringency.

The White House agreement, in Honda's view, represents a great step forward in the much needed regulation of greenhouse gases. The agreements signal wide consensus that the interests

of the country are best served by starting a greenhouse gas regulation and by a national implementation of that regulation.

Honeywell International, Inc.

Honeywell supports EPA and NHTSA in its historic effort and has offered the agencies solutions to better reflect the direct and indirect emissions associated with mobile A/C Systems. [OAR-2009-0472-7206.1, p.10]

Honeywell Transportation Systems

HTS commends the Environmental Protection Agency ('EPA') and the National Highway Traffic and Safety Administration ('NHTSA') in their historic effort to reduce greenhouse gas ('GHG') emissions from mobile sources and reduce oil consumption through improvements in fuel economy. We recognize the vast challenge before the two organizations and applaud the development of a workable solution that protects the environment while providing flexibilities important to maintaining a viable automotive industry. The Proposed Rulemaking presents a framework that should be economically practicable and successful in achieving these challenging goals. Please continue this important work and ensure a harmonized national standard is maintained to secure the future health of an industry that is so integral to domestic and global economies. [OAR-2009-0472-7165.1, p.2]

We respectfully submit comments with the view that the Proposed Rules should encourage compliance with rules and policy objectives while remaining technologically neutral. We believe that the enacted rules should ensure fair treatment of innovators, foster the development of new and more effective technologies, and not simply favor currently popular technologies. Setting clear standards and selection criteria without prescribing specific solutions will inspire innovation that will stand the test of time. [OAR-2009-0472-7165.1, p.2]

We urge EPA and NHTSA to ensure that decisions taken pursuant to the final Rule incorporate the best available data on technology performance, vehicle usage, and geographic considerations. Through these comments and suggestions, we strongly encourage measurable, efficient solutions that improve fuel economy and reduce GHG emissions. [OAR-2009-0472-7165.1, p.2]

Hyundai Motor Company

The improvement of fuel economy and control of GHG are very important issues to Hyundai. In our 2008 comments on the proposed NHTSA MY 2011 through 2015 CAFE standards Hyundai recognized California for beginning a critical national debate on fuel economy and GHG policy. Moreover, we supported early implementation and a faster ramp up to NHTSA's then 2020 fleet fuel economy target of 35.0 miles per gallon (mpg) under the 2007 Energy Independence and Security Act. That same year, Hyundai became the first automaker to pledge to achieve 35 mpg by 2015 . On November 20, 2009, EPA's 2009 Fuel Economy Trends Report 2 shows that Hyundai is now the industry leader in brand fuel economy performance for MY 2008 and 2009.

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.67-72]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 79-80.]

First I want to clearly state that the improvement of fuel economy and the control of greenhouse gases are very important issues for Hyundai, and we appreciate the opportunity to testify here today.

That same year, we became the first automaker in America to pledge that we would meet the then 35-mile-per-gallon rule by 2015, not 2020. The fuel economy regulations have now changed, but our goal remains the same. We've become the industry's fuel economy leader propelled by our Hyundai Blue Drive initiative.

Hyundai applauds this joint NHTSA-EPA rulemaking exercise here. It represents unprecedented regulatory cooperation. It seeks a national solution for reducing greenhouse gas emissions and improving fuel economy of motor vehicles, and it works toward a global solution for addressing climate change.

A unified program allows manufacturers to develop a concerted and cost-effective way to work in the development of advanced technologies. We believe that a single national program is the most efficient and practical approach now and in the future. This is a global and a national problem and should be addressed on a national basis.

Insurance Institute for Highway Safety (IIHS)

IIHS supports NHTSA's efforts to increase fuel economy while maintaining vehicle safety through the use of an attribute-based system. [NHTSA-2009-0059-0125.1, p.1]

International Council on Clean Transportation

This proposed rule takes a giant step towards catching up with vehicle efficiency in Europe, Japan, and other nations (see graphic below) and will enhance U.S. credibility worldwide. We applaud EPA and NHTSA, along with California, the Administration, and the vehicle manufacturers, for taking the first steps along the road to a sustainable transportation system. There are tremendous opportunities to dramatically reduce climate change emissions from passenger vehicles in the coming years and it is essential to continue this progress in the future. Long-term goals need to be set, so that manufacturers have consistent, long-term signals to help them develop future technologies and product plans. This is especially important in the context of the recession, with companies reorganizing and investment dollars in short supply. ICCT supports a strong Federal rule and recognizes and applauds the constructive role that California has played in building the technical and public support for this critical rulemaking. We urge all parties to continue the process and set aggressive standards for 2017 and beyond.

ICCT strongly supports the proposed program stringency.

[OAR-2009-0472-7156.1, pp.1-2]

Kia Motors

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.169-170]

The joint EPA/NHTSA proposal is also important to Kia because it works towards the only meaningful resolution of these issues, which is a global solution of addressing climate change and energy security.

Kia strongly believes that a single national program to regulate greenhouse gas emissions and improve the fuel economy of motor vehicles is the most efficient way and practical approach now and in the future.

We strongly encourage dialogue between California, EPA, and NHTSA on the creation of post-2016 model year national standards and look forward to participating in such discussions.

In addition to supporting an overall goal of a national program, we also support the various compliance flexibilities outlined in the joint proposal, including credit transfers and trading, credit for advanced technologies, and early credits.

These mechanisms are important to provide a cost-effective means of achieving the standards. This is of particular importance to Kia due to our specific customer need for affordable quality vehicles with long-term warranties.

Lance Tunick

[[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 140]]

I would also like to start off by saying that I fully support a GHG standard that makes SVMs do their fair share and that does not give them a free ride.

Such an approach is already taken by both NHTSA in its CAFE program as well as by the European Union where, in both cases, an SVM can obtain an alternative standard determined on a case-by-case basis and based on feasibility.

League of Women Voters of South Carolina (LWVSC)

Thank you for the opportunity to share our viewpoints on this very important matter. We fully support and appreciate your efforts by requesting that the new rules and standards be implemented as soon as possible. [NHTSA-2009-0059-0137, p. 2]

Please allow this letter to serve as a comment on the above matter from the League of Women Voters of South Carolina (LWVSC). Though we understand fully that the comment period on the above issues ended in late November we are nonetheless compelled to share our voice on this issue. [NHTSA-2009-0059-0137, p. 1]

LWVSC is very disappointed that South Carolina Department of Health and Environmental Control (SCDHEC), our state's own environmental protection agency, failed to take sufficient care in expressing their concerns and disagreement with the federal rules to control greenhouse gas pollution that contribute to climate change. [NHTSA-2009-0059-0137, p. 1]

Some of SCDHEC's concerns related to program implementation costs may be legitimate. However, LWVSC believes that program costs should be weighed against what South Carolina could face in terms of environmental and public health consequences should the new rule not become law. As a coastal state we are continuously challenged by extreme weather conditions such as hurricanes, tornadoes, drought, and rising sea levels. LWVSC would also argue that SCDHEC's comments regarding the program's potential impact on the South Carolina economy is neither evidence-based nor within SCDHEC's scope of responsibility for comment. [NHTSA-2009-0059-0137, p. 1]

LWVSC is unsure whether SCDHEC's comments do or do not support consideration of the regulatory action, or even whether they support any action to control greenhouse gas emissions. If the intent of SCDHEC's comments is to be non-supportive of the final rule for the Endangerment and Cause or Contribute Findings for the Greenhouse Gases Under Section 202 (a) of the clean Air Act (Federal Register, December 15,2009), then LWVSC believes that SCDHEC has made a serious mistake and its comments are unacceptable for protecting the public health and environment of South Carolina. [NHTSA-2009-0059-0137, p. 1]

While LVWSC supports new federal legislation on greenhouse gases, there is no assurance at this writing that such legislation will pass in the near future. In short, the only protection we can expect for the residents of South Carolina will be the minimum federal environmental and health standards passed down to the respective states because of our own state agency as shown in their comments to you, will not adopt any stronger regulations even when negative outcomes are so evident. [NHTSA-2009-0059-0137, p. 2]

Lee Auto Components

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 123-124.]]

After all these years, I couldn't be more believed and proud that Detroit finally stands with the Obama administration in an effort to raise fuel economy standards and restrict greenhouse gas emissions.

Magavern, Bill

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, p.180]

So I see this as being a huge step forward for our country as we grapple with global warming and decreasing our energy dependence. And I say this as someone who has been involved in this issue for over 20 years now.

So we really thank President Obama for taking the bold action he did earlier this year in basically aligning national standards with California standards, recognizing California's leadership, bringing the automakers into the tent, and moving forward on this very important regulation.

I'm very impressed in your analysis that you're showing a benefit-to-cost ratio of over four to one from this rule, which is very impressive, and we actually think it could be higher because we think that your analysis understates the social cost of carbon. We do urge you to do another assessment because we think you're underestimating the social cost of carbon.

Manufacturers of Emission Controls Association

In conclusion, MECA commends EPA for taking important steps to reduce greenhouse gas emissions and improve fuel economy from light-duty vehicles. MECA believes that a variety of advanced powertrain options are available for reducing carbon dioxide emissions from passenger vehicles and light-duty trucks. [OAR-2009-0472-7108.2, p.11]

MECA believes that EPA should include black carbon emissions as part of its overall greenhouse gas emission control strategy. [OAR-2009-0472-7108.2, p.7]

Mass Comment Campaign (13,829) (Union of Concerned Scientists)

I applaud your combined efforts to implement the national clean car standards announced by President Obama. These standards are a win for U.S. drivers, whose gasoline savings will outweigh any increased costs for vehicle technology developments. Indeed, your own analysis shows that automakers could reach significantly higher efficiency standards than those proposed and still save consumers money. [OAR-2009-0472-3906, p.1]

But 30 years without any significant change in fuel economy standards has shown that only a strong rule will ensure that clean car choices become a reality. Past loopholes to fuel economy rules, such as allowing automakers to reclassify cars as 'light trucks' to decrease fuel economy requirements and incorporating weight thresholds that allowed gas guzzlers like the Hummer to evade all fuel economy regulations, helped to create the current environmental and economic predicament the automobile industry finds itself in. [OAR-2009-0472-3906, p.1]

The final clean car rule must guard against any potential loopholes or other efforts to weaken the effectiveness of the standards. Creating a strong national program will fulfill the president's commitment, provide U.S. consumers with clean vehicle choices, and allow the struggling auto industry to emerge as the model for a clean energy economy. [OAR-2009-0472-3906, p.1]

Mass Comment Campaign (18,583) (unknown organization)

I support the proposed EPA - NHTSA rule to set strong global warming pollution standards for personal vehicles. This landmark rule would:

-- Limit greenhouse gas pollution from automobiles;
-- Improve fuel efficiency by about 5% annually;

-- Reduce fleet-wide greenhouse gases 19% by 2030; and
-- Cut carbon dioxide emissions by an estimated 950 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). [OAR-2009-0472-3907, p.1]

Global warming is the most serious environmental threat facing the planet today. Americans face a wide variety of public health threats, from the spread of infectious diseases to worsening air quality to more intense weather events heat waves, floods, droughts. [OAR-2009-0472-3907, p.1]

I applaud EPA and NHTSA for setting the first greenhouse gas emissions limits in American history and encourage the Obama administration to continue to find ways to curb the pollution that causes global warming. [OAR-2009-0472-3907, p.1]

Mass Comment Campaign (19) (unknown organization)

Thank you for your efforts to implement the national unified fuel economy standards announced by President Obama. I applaud your efforts to issue strong standards while also protecting jobs in the domestic auto industry. We must design these regulations in a way that fairly distributes the burdens across the industry so we can create new jobs while we move forward with reducing carbon pollution and enhancing energy security. [OAR-2009-0472-5748, p.1]

Also, the final rule must guard against any potential loopholes or other efforts to weaken the effectiveness of the standards. Creating a strong national program will provide U.S. consumers with clean vehicle choices and allow the struggling auto industry to emerge as the model for a clean energy economy. [OAR-2009-0472-5748, p.1]

Mass Comment Campaign (2,332) (unknown organization)

I urge that you protect the greenhouse gas and fuel economy standards for passenger cars and light trucks from being undermined by the various credits being offered. [OAR-2009-0472-5747, p.1]

Automakers have been dragging their feet in making improvements in fuel economy for 25 years. There is ample technology ?on the shelf? to meet the proposed standards without unduly burdening the industry. If automakers had acted to build more efficient cars and trucks, consumers would not have been hit as hard by $4-a-gallon gas a little over a year ago. It is time to put fuel efficient vehicles people want to buy on the market. [OAR-2009-0472-5747, p.1]

President Obama set a goal in May to put us on a path towards reduced greenhouse gas emissions and oil consumption. I urge that every effort be made to ensure the president's goal comes to fruition. [OAR-2009-0472-5747, p.1]

Mass Comment Campaign (27,307) (Alliance for Climate Protection)

The Alliance for Climate Protection commends the Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) in their efforts to propose regulations to limit greenhouse gas emissions and improve fuel economy from automobiles and light trucks . These measures are important to limit global warming pollution, reduce America's dependence on foreign oil, revitalize the US auto industry, and save consumers money at the gas pump. [OAR-2009-0472-7295, p.1]

The Alliance informed its members about this proposed rule, and provided them with an opportunity to support the draft regulation. Interested members expressed support for the proposal by submitting signing on to a shared statement to serve as public comments to EPA and NHTSA. [OAR-2009-0472-7295, p.1]

The statement is: 'I support efforts to strengthen fuel efficiency standards that will reduce pollution and revitalize our auto industry.' [OAR-2009-0472-7295, p.1]

In total, 27,307 Alliance members endorsed the petition. [OAR-2009-0472-7295, p.1]

The Alliance for Climate Protection supports the intent of the proposed rule and encourages EPA and NHTSA to finalize a rule that includes the most stringently constructed fuel economy standards and mandatory greenhouse gas tailpipe limits that will maximize fuel savings and minimize greenhouse gas pollution. [OAR-2009-0472-7295, p.1]

Mass Comment Campaign (32,918) (Sierra Club)

I applaud Environmental Protection Agency and National Highway Traffic Safety Administration for proposing standards that will make our cars and trucks cleaner and more efficient. The vehicles sold under these standards will carry out President Obama's historic announcement and save 1.8 billion barrels of oil, $193 billion in consumer gasoline costs, and significantly reduce our greenhouse gas emissions. [OAR-2009-0472-5749, p.1]

I urge the EPA and the Department of Transportation not to let excessive credits and unneeded flexibility keep us from reaching oil savings and emission reduction goals. Both agencies should include a backstop that will ensure the auto industry meets the 2016 targets. As it stands now, if automakers simply produce more gas guzzling trucks than the proposal predicts, we could end up with more pollution and less oil savings. [OAR-2009-0472-5749, p.1]

These standards will help Detroit become a leader in green vehicles by putting the best of today's technology to work and investing in future technologies, such as electric vehicles. But we need to ensure that electric vehicle credits don't allow automakers to fail to clean up other vehicles in their fleet. While electric vehicles don't have a tailpipe, producing the electricity used to power an electric vehicle does emit greenhouse gases. The standards should treat electric vehicles accurately. [OAR-2009-0472-5749, p.1]

I am excited about cleaner cars and applaud the Administration for proposing standards that are a win for consumers, automakers, and the environment. Strong final rules will take vehicle standards out of the 1970s and into the 21st century, laying a strong foundation for the cleaner

vehicles we need to end our reliance on oil and curb global warming. [OAR-2009-0472-5749, p.1]

Mass Comment Campaign (326) (Student PIRGs)

Thank you for the leading the way on global warming by proposing the first-ever federal standards to reduce global warming pollution from cars and light trucks. This historic action will reduce our nation's oil dependence, save consumers money at the pump, and cut global warming pollution. [EPA-HQ-OAR-2009-0472-11293, p. 1]

Mass Comment Campaign (7,239) (unknown organization)

The president's 35 mpg by 2016 target will help me and all Americans play a stronger role in curbing oil dependence and global warming pollution, and help in the transformation and revitalization of our struggling auto industry. [OAR-2009-0472-3905, p.1]

As we know from 30 years of stagnation on national fuel economy, your plan will be the key to ensuring that the president's stated goal -- 35 mpg by 2016 -- becomes reality. [OAR-2009-0472-3905, p.1]

Significant past loopholes, such as allowing automakers to reclassify cars as 'light trucks' to decrease fuel economy requirements and incorporating weight thresholds that allowed gas guzzlers like the Hummer to evade all fuel economy regulations, helped to create the current environmental and economic predicament the industry finds itself in. [OAR-2009-0472-3905, p.1]

Only a strong final plan that ensures the president's targets are met will deliver the clean car choices, oil savings, and jobs that a transformed auto industry can bring. [OAR-2009-0472-3905, p.1]

I look forward to seeing the Environmental Protection Agency and the Department of Transportation working together to deliver and implement strong national clean car standards. [OAR-2009-0472-3905, p.1]

Mercedes-Benz (Daimler AG)

We agree with the conclusion that the nation can't wait for the automobile industry to recover before pushing forward on greenhouse gas reductions. In fact, our chairman often describes the current crisis as an opportunity for strong companies like ours to refocus their investment and be even stronger in a post crisis world, and so for that reason our [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 48.] company, Daimler, is moving full steam ahead, we have not reduced our investments in any way and we expect to have significant improvements in our entire fleet across all of our vehicles in the coming years. In this spirit, we are pleased to participate in this forum and lend our support to this proposed rule. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 49.]

Mitsubishi Motors R & D of America (MRDA)

Mitsubishi Motors strongly supports the development of a National Program to regulate light-duty vehicle greenhouse gas emissions which reduces the regulatory burden upon Automakers while significantly decreasing light-duty vehicle greenhouse gas emissions. In order to continue Automakers' efforts to comply with the National Program, Mitsubishi Motors urges EPA and NHTSA to continue to work together to extend the National Program beyond MY 2016. [OAR-2009-0472-7125.1, p.1]

Mitsubishi Motors applauds the joint rulemaking efforts of EPA and NHTSA, and specifically supports the respective organization's harmonization efforts under the National Program. [OAR-2009-0472-7125.1, p.5]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.85-87]

Mitsubishi Motors supports the efficient and practical approach to achieving true greenhouse gas reductions and fuel economy improvements, a single national standard.

This joint rulemaking by EPA and NHTSA is an important step of establishing a cohesive national program to reduce greenhouse gases and improve fuel economy. This unified program should allow manufacturers to develop cost-effective processes in meeting these standards and deploying advanced technology vehicles.

Motor and Equipment Manufacturers Association

MEMA is encouraged by the collaborative effort between the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) to improve fuel economy and reduce emissions under one National Program. Compatible and consistent standards allow vehicle manufacturers to focus their resources on investing in the best technologies, which in turn, feeds the ability of the supplier base to advance development and transfer research technologies into commercially viable products. MEMA and the supplier industry are committed to policies that enable the introduction of new technologies needed to support sustainable mobility. [OAR-2009-0472-7121.1, cover page]

The state of the nation's economy has severely challenged the motor vehicle industry and many suppliers are facing huge financial shortfalls. MEMA is encouraged by the collaborative efforts between the National Highway Traffic Safety Administration (NHTSA), Environmental Protection Agency (EPA), and the State of California to approach GHG emissions and fuel economy standards under one National Program with compatible, consistent standards. MEMA strongly supports a uniform National Program based on GHG reduction and increased fuel economy because it allows vehicle manufacturers to focus their resources on investing in the best technologies available. This, in turn, feeds the ability of the supplier base to advance development and turn research technologies into commercially viable products. [OAR-2009-0472-7121.1, p.2]

MEMA supports the approach taken by the Administration to bring together the light-duty vehicle fuel economy standards and emissions standards into a joint National Program. A uniform program not only allows vehicle manufacturers to invest in the appropriate technologies their vehicles need to reach and exceed fuel economy and emissions targets, but also helps the supplier base convert research technologies into commercially viable products. [OAR-2009-0472-7121.1, p.13]

[See docket OAR-2009-0472-7121.1, p. cover page-2 for detailed introduction and p.12 for detailed conclusion]

Mr. Richter - Environmental Capital Partners

The most obvious is environmental, which encompasses human health and quality of life. It's fairly obvious if we drive the same number of miles and produce less tailpipe emissions, of course, we're going to help out the ecological systems and our societies in general. I think you've all seen the National Academy of Sciences recently released report describing it's estimated that $120 billion worth of health cost of burning fossil fuels. These are real dollars, they're real health concerns, and we can do an awful lot if we just eliminate a percentage of the transportation pollution. [Comment submitted as testimony at the New York public hearing EPA-HQ-OAR-2009-0472-4621, pp.159-160]]

So I will close in saying that raising CAFE standards is not the only answer to the many deep and varied challenges that this nation and the world face, of course, but it is a simple proven, relatively low cost method of combatting global warming, improving our competitiveness in the auto industry, strengthen our energy security, stimulating our economy, and reclaiming our moral standing in the international community. My suggestion and hope is that the EPA takes the most aggressive approach possible and demands the highest standards in the world for the American car industry as quickly as possible. Decades of ignoring this responsibility has left us with no other choice but to learn from the past and much, much upside if we do. [OAR-2009-0472-4621, p.164-165]

National Asphalt Pavement Association

As the national association representing the majority of asphalt pavement producers and contractors, we commend the EPA and the NHTSA for working together to develop a rule that will result in significant improvements in fuel economy. [OAR-2009-0472-7224.1, p.1]

National Association of Clean Air Agencies (NACAA)

Our association strongly supports timely and effective action to curb GHG emissions from light-duty vehicles and, therefore, supports this proposal. [OAR-2009-0472-7071.1, p.1]

Global warming is the most pressing global environmental issue facing our generation. The Intergovernmental Panel on Climate Change (IPCC) stated in 2007 that the evidence that global warming is already affecting our planet is “unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and

rising global average sea level." And since the IPCC report was released, even more compelling research and evidence have accumulated demonstrating that we need to act now to reduce GHG emissions. [OAR-2009-0472-7071.1, p.1]

As EPA data confirm, the mobile source sector is responsible for approximately 36 percent of total U.S. GHG emissions, taking into consideration upstream transportation fuel emissions (such as those associated with extraction, shipping, refining and distribution), as well as nonroad mobile sources (including construction, farm and lawn and garden equipment). This level exceeds electricity generation, which accounts for approximately 34 percent of total U.S. GHG emissions. Given this significant contribution, a comprehensive regulatory strategy to reduce GHG emissions from the mobile sector must be developed and implemented without delay. [OAR-2009-0472-7071.1, p.1]

For this reason, NACAA applauds EPA and NHTSA for this landmark federal proposal which, in addition to improving the fuel economy of cars and light-duty trucks, puts in place the first ever national program for reducing motor vehicle GHG emissions. The proposed standards to reduce GHG emissions from light-duty vehicles in model years 2012 through 2016 are a very commendable first step forward in what must be an ongoing effort to make light-duty vehicles and our nation's entire mobile source fleet and fuels as clean and "green" as possible. [OAR-2009-0472-7071.1, p.1]

We are confident that these standards can be implemented with success, given EPA's proven 30-year-plus track record of establishing and implementing motor vehicle emissions standards under Title II of the Clean Air Act. The technical research and analysis that EPA has conducted illustrate the agency's thoughtful deliberation of various approaches for this program, leading to a proposed set of national light-duty vehicle GHG emissions standards that can be achieved with known and available technologies. [OAR-2009-0472-7071.1, p.2]

Moreover, the automobile manufacturers have endorsed the establishment of a national program for vehicle GHG emissions standards and Corporate Average Fuel Economy standards. In commitment letters signed on May 18, 2009, automakers and the trade associations that represent them stated that they "recognize the benefit for the country of a National Program to address GHGs and fuel economy and the historic announcement of EPA and NHTSA's intent to jointly propose a rule to set standards for both. They further stated that they "fully support proposal and adoption of such a National Program," that they "welcome this opportunity to be a partner in helping to advance a harmonized National Program" and that they "commit to working with EPA and NHTSA, the states, and other stakeholders to help our country address global climate change and the need to reduce oil consumption by developing this kind of strong, coordinated, national program for the model years after 2016." [OAR-2009-0472-7071.1, p.2]

[NACAA also submitted these comments as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, pp. 54-60.]

National Association of Manufacturers

The NAM supports the Administration's broader policy objectives of harmonizing vehicle emission standards under a National Program and promotion of energy efficiency through enhanced CAFE standards through the Department of Transportation (DOT). Not only does establishment of national, uniform standards have the potential - if implemented correctly- to create a climate of investment certainty necessary to make long-term business decisions, but stronger energy efficiency objectives will also enhance domestic energy security, which is a key policy priority for manufacturers. The NAM applauds the Administration's objective to "mitigate the additional costs that manufacturers would otherwise face in having to comply with multiple sets of federal and state standards." [OAR-2009-0472-7215.1, p. 2]

National Association of Manufacturers

NAM supports the Administration's broader policy objectives of harmonizing vehicle emission standards under a National Program and promotion of energy efficiency through enhanced CAFE standards through the Department of Transportation (DOT). Not only does establishment of national, uniform standards have the potential - if implemented correctly- to create a climate of investment certainty necessary to make long-term business decisions, but stronger energy efficiency objectives will also enhance domestic energy security, which is a key policy priority for manufacturers. The NAM applauds the Administration's objective to mitigate the additional costs that manufacturers would otherwise face in having to comply with multiple sets of federal and state standards. [OAR-2009-0472-7215.1, p.1]

National Automobile Dealers Association (NADA)

Ever since enactment of EPCA in 1975, NADA has supported the goal of continuous fuel economy improvements, while recognizing the constraints inherent in any "push" approach to improving motor vehicle fuel economy performance. Simply put, the ultimate success of any policy directed at improving new vehicle fuel economy and GHG performance rests with consumer new vehicle preferences. Unless and until consumers actually buy and use new vehicles, the fuel economy and GHG emissions benefits associated with those vehicles cannot and will not be realized. Prospective purchasers in search of personal transportation have alternative choices to buying or leasing new vehicles. Specifically, they always may elect to hold onto their existing vehicles longer or to turn to the used vehicle marketplace. Production mandates resulting in vehicles with performance constraints or high prices will lead to lower new vehicle sales. Thus, any National Program must incorporate feasibility and affordability as essential elements designed to achieve the energy and environmental benefits associated with fleet turnover. Of greatest importance for dealers, for energy security, and for the environment is not what can be built, but what the motoring public is willing and able to buy. [OAR-2009-0472-7182.1, p.2]

[National Automobile Dealers Association also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, pp. 84-85.]

I'd like to commend you for working hard to try to design a single national fuel economy standard that aims to avoid an unworkable patchwork of state-based laws. Coordinating the regulatory efforts of two important federal agencies is a challenging task, especially given the

important differences in each agency's statutory structures, mandates, goals and objectives. It is in this light that today I will present three major points. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 80.]

Natural Resources Defense Council

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 18-19.]

NRDC applauds the creation of the National Program. The program is a historic step forward for protecting the environment and helping consumers save money at the pump. It secures the benefit of the California Vehicle Emissions Program while also giving consumers more clean vehicle choices. The program represents a path forward on new vehicle standards that is clearly a win for automakers, their workers, and the States. It's good for automakers because it gives them certainty and lays the foundation for them to be more sustainable businesses in a future world of volatile fuel prices and intensifying global warming. It is good for auto workers because a stronger industry means more better paying jobs. The program is also good for the states because it preserves their right to act to protect their local interests and citizens and it upholds their tremendous value as laboratories for clean vehicle policy.

The joint proposal establishes an important policy partnership by aligning the fuel conservation directive of the Energy Policy and Conservation Act with the pollution and health protections of the Clean Air Act. The Supreme Court ruled in Massachusetts v EPA that the Clean Air Act is the appropriate law for controlling carbon pollution and the Clean Air Act authority brings new important perspectives to standards that reduce vehicle carbon emissions.

In addition to having health and welfare as primary drivers of the standards, the Clean Air Act provides technology enforcing standards, and it includes the flexibility to set standards over longer time frames. Unlike EPCA, which limits NHTSA to setting standards just five years into the future, the Clean Air Act allows EPA to set longer term standards based on advanced, not just incremental technologies. This approach increases regulatory certainty for automakers and enables them to more effectively plan new technology in this strategic manner.

New York City Law Department

In light of the City's unique vulnerability to the impacts of climate change and its on-going efforts to reduce greenhouse gas emissions and improve air quality within the City, we write to provide these comments in support of the proposed rules, and to highlight the rules' potential beneficial interaction with legislation now pending before Congress that would allow states and municipalities to set fuel economy and emissions standards for their taxicabs and other for-hire fleets. [OAR-2009-0472-7240.1, p.1]

Northeast States for Coordinated Air Use Management

Thus, NESCAUM applauds EPA for taking an extremely important step towards reducing transportation-related GHG emissions. The proposed rule, once implemented, will reduce

lightduty vehicle GHG emissions 21 percent by 2030. The rule will also increase energy security — the U.S. currently consumes more than 18 million barrels of oil a day, and imports about 60 percent of total consumption. Of this, more than 8 million barrels a day are consumed in lightduty vehicles. The rule will reduce oil consumption by approximately 1.8 billion barrels over the lifetime of the vehicles that will be sold in model years 2012 to 2016. [OAR-2009-0472-7235.1 p.1]

[Northeast States for Coordinated Air Use Management also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 41-42.]

New York State Department of Environmental Conservation

The greenhouse gas (GHG) emission standards proposed here are an important step towards minimizing the risk to human health and environmental quality posed by global warming. These risks include increases in heat related illness and increases in the range of disease vectors. Sea level rise and changes in rainfall patterns are also expected, with attendant risks to coastal infrastructure and agricultural production. There may be too much water in some places and not enough in others. These risks are too great to ignore. [OAR-2009-0472-7454, cover page 1]

This joint proposal is long overdue. Along with its neighbors, New York State has been at the forefront of efforts to combat global warming. Pursuant to Section 177 of the Clean Air Act (Act), New York has adopted California's greenhouse gas emission standards for light duty vehicles. New York has also acted, through the Regional Greenhouse Gas Initiative, to reduce emissions from electric power generation. We applaud EPA's decision to use its authority, under the Act to reduce GHG emissions. [OAR-2009-0472-7454, cover page 1]

[New York State Department of Environmental Conservation also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 15-18]

New York State Department of Transportation (NYSDOT)

NYSDOT commends the Obama Administration, NHTSA, and the EPA for their joint efforts to improve the fuel economy of the light duty vehicle fleet. We also commend the Administration and the agencies for pursuing harmonized national emissions and fuel economy standards that are consistent with the automotive emissions control program established by the State of California under the authority of Section 209 of the Clean Air Act and by several other states, including New York, under the authority of Section 177 of the Clean Air Act. [OAR-2009-0472-7531.1, p.1]

New York University School of Law, Institute for Policy Integrity (IPI)

The Institute for Policy Integrity strongly supports the efforts of the Environmental Protection Agency (EPA) and the National Highway Transportation and Safety Administration (NHTSA) to address the problem of greenhouse gas (GHG) emissions from light-duty vehicles in this joint

rulemaking. This joint proposal of new Corporate Average Fuel Efficiency Standards (CAFE) from NHTSA and greenhouse gas emission standards (GHG Standards) from EPA for light-duty motor vehicles is an important move toward meeting EPA's obligations under the Clean Air Act (CAA), as defined by the Supreme Court in Massachusetts v. EPA. [OAR-2009-0472-7232.3, p.1]

However, this is only the first step. Several petitions are pending before EPA to regulate a variety of other mobile sources that produce significant greenhouse gas emissions, including a petition from this Institute. In order to fully comply with its mandates under the Clean Air Act, EPA must address all significant sources of greenhouse gas emissions and must respond to these petitions. [OAR-2009-0472-7232.3, p.1]

We applaud the agencies efforts to respond to the legal obligations under Massachusetts v. EPA and to the growing risks associated with GHG emissions. The recommendations contained in these comments will allow EPA to more efficiently and effectively meet these goals. [OAR-2009-0472-7232.3, p.18]

NGVAmerica

NGVAmerica supports the U.S. EPA effort to regulate greenhouse gas emission from motor vehicles. Regulating greenhouse gas emissions from transportation sources is an important part of the overall effort to reduce greenhouse gas emissions and help mitigate America's impact on climate. Therefore, we agree with EPA's assessment that such emissions must be controlled. [OAR-2009-0472-7236.1, p.5]

Nissan North America

The Notice of Proposed Rulemaking is consistent with the National Program in terms of both the stringency of the standards and the structure of the two programs. More significantly, the proposed Joint Rulemaking is consistent with the overarching goal of encouraging and acknowledging investment in a zero emissions transportation system. [OAR-2009-0472-6798.1, p.1]

Pacific Unitarian Church, Green Sanctuary Project

Please support. [OAR-2009-0472-7241, p.1]

Pavley, Fran, California State Senate

In May of this year I had the honor of being present in the Rose Garden with President Obama, Congressional leaders, and CEO's from major automobile companies, EPA and California officials, and advocates for the passage of a comprehensive Federal program to reduce greenhouse gas emissions from passenger automobiles and light duty trucks. It was 7 years ago that California's Clean Cars bill, AB 1493, was signed into law, and in 2004 the California Air Resources Board unanimously adopted the regulations. The standards to reduce greenhouse gas emissions by 30% by 2016 were based on off-the-shelf, cost effective, and available

technologies. Expert engineers were able to quantify greenhouse gas emission reductions based on a package of technologies that could be used in different classes of vehicles, allowing for consumer choice. Independent public opinion polls each July from 2002-2009 by the PPIC shows that across geographic, demographic and political parties, Californians continue to strongly support these regulations. In 2004, when these regulations were adopted, gas was nearly $1 dollar less per gallon, and global conflicts were less threatening to our economic security. In addition, in 2004 we did not include our target greenhouse gas reductions under AB 32, or even the alternative fueled vehicles, such as hybrids, that are on the market today. We certainly didn't consider the public's growing interest as well as the competitive race among automobile companies, to build electric vehicles and plug in hybrids. [OAR-2009-0472-7275.1, pp.1-2]

I am confident that automakers' topnotch engineers will be able to design cleaner cars to meet these standards not just in California but also across the nation. Rising gas prices, a growing public concern about the dependence of importing oil and how that affects our security, the health impacts of air pollution, as well as the visible and growing impacts of global warming, have increased the publics demand for cleaner, more fuel-efficient cars. [OAR-2009-0472-7275.1, p.2]

In California, and many other Western states, we are in our record 3rd year of drought. We have documented evidence of an earlier melt of our snow pack, with more rain than snow at higher elevations, causing an unreliable water supply during our shorter springs and long hot summers. Sea level rise along our coast as well as states like Florida are a growing concern. From salt water intrusion into our water supply, inability to get insurance along low lying coastal properties as well as in our dry parched hillsides, and the potential to seriously impact our state's coastal dependent tourism economy, we are very concerned about the cost of doing too little or nothing to address the impacts of global warming. [OAR-2009-0472-7275.1, pp.2-3]

There is a compelling link between global warming and air pollution. Warmer temperatures increase our ozone and smog forming pollutants. We have alarming and growing respiratory illness, asthma and cancer rates occurring among our youth and the elderly. Several intense heat waves over weeks at a time have caused illness and deaths. Lower income neighborhoods that often lack air conditioning are particularly at risk during heat episodes. Agricultural losses, increases in vector borne diseases, and a dramatic increase in loss of property and air pollution from costly wildfires have become the new normal. California is not the only state that is impacted by air pollution. [OAR-2009-0472-7275.1, p.3]

From Denver, to Chicago, to Albuquerque New Mexico, air pollution is a serious health problem. Two years ago, I testified in Santa Fe, New Mexico as they were having a hearing on adopting California's Clean Car standards. Several doctors and pediatricians, on their own initiative, came to support the policy because of their concerns of their patient's health. For many, they said it was the first time they had ever testified at a government hearing. [OAR-2009-0472-7275.1, pp.3-4]

[Fran Pavley also submitted these comments as testimony at the Los Angeles public hearing. See docket LA EPA Hearing EPA-HQ-OAR-2009-0472-7283, pp. 13-20]

Peters, Doug

[The following comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 118-122.]

I felt personally compelled to come here today to support this regulation because of the national security aspects of climate change and our nation's dangerous dependence on both foreign and domestic oil.

Oil dependence also threatens our economic stability. Everyone knows that. In the last year alone we have seen the price of oil in a very volatile manner go from approximately $140 a barrel down to $40 a barrel. We'll pay a much higher price in terms of American lives and our economy if we delay or fail to act to reduce our oil dependence right now. This is the consensus among national security experts and retired generals and admirals. This is why this rule is so important. This regulation will be a tremendous first step. It is estimated this regulation will save 1.8 billion barrels of oil over the lives of the vehicles sold between 2012 and 2016. This is a very important step in a long road to the energy and climate security that our nation needs and, most importantly, cannot be the last.

I spent five years in the Marine Corps. In that time I participated in both Afghanistan and Iraq invasions. On January 9, 2002 seven Marines from my squadron became the first Marines to die following the 9/11 attacks. Seven of my friends of which I left American soil with were the first Marine casualties suffered by this nation. I guess my time overseas, particularly the time I spent in Pakistan, Afghanistan, and the Middle East in general served as a true wake-up call for me. I realized that the way America would have to interact with the world going forward had changed. I realized that new threats had emerged, unconventional threats. I witnessed U.S. military go from old war style of fighting to that of asymmetric warfare practically overnight.

One of those new threats, as intangible as it may seem at times, is climate change or climate disruption. Climate disruption is obviously not one of your traditional military threats. It's what the military refers to as a threat multiplier. Climate change has the potential to destabilize fragile governments, turning those governments into failed states, has potential to spark mass migration of populations, turning those populations into refugee populations, has the potential to spark conflicts over scarce water resources and scarce agricultural resources.

In these types of environments and scenarios the possibility exists for extremists to hide, the possibility exists for extremists to recruit and train desperate members of these populations and turn them against us. We've already seen this happen in Bangladesh, Darfur, Somalia, and other places in the Horn of Africa. Climate disruption is such a viable threat, the Pentagon has already started creating contingency scenarios for them. In fact, the Pentagon will focus on its issue in its 2010 quadrennial defense review as I believe the State Department will in its quadrennial diplomacy and development review. In other words, U.S. military is going to be called upon to respond to such scenarios and threats. This is in addition to the pre-existing wars and challenges

the U.S. military already faces. I believe one of the most misunderstood or underfelt aspects facing today's military is the continuous deployment cycles of U.S. troops overseas.

Now, the U.S. military will always step up, that's what we do, it's an honor and a privilege, but when troops are on their third, fourth, and even fifth deployments overseas to either Afghanistan or Iraq, that places a tremendous burden on the troops themselves and on their family members. This burden will only be intensified if the military is forced to respond to such threats posed by climate change or climate disruption. Good examples of this scenario can be found in the 2004 Indonesia tsunami when the U.S. military was called in to provide aid. The U.S. military is the only organization in the world that has the strength, the know-how, and the resources to respond to such conflicts or disasters. You can even take Hurricane Katrina as another example. For these reasons, implementation of this rule is vital to our national security. It is estimated that this rule will reduce greenhouse gas emissions by 950 million metric tons by 2016. Climate security, in other words, is our nation security.

Equally threatening to our national security is America's dependence on oil. Now, obviously this is not a new threat, it's been around a while. It's been realized, but I don't believe it's been as recognized as it should be. As I mentioned, our military is already stretched very thin, and ensuring the constant flow of oil around the globe has become a constant if not secondary occupation and task of the U.S. military, yet this is another burden on top of the war fighting responsibilities and the preparation we have to put in for future contingencies.

Because we simply do not have enough oil in the United States to meet our demand, we have to -- we are forced to rely on hostile regimes such as Iran or potentially Venezuela for our oil. Especially considering Iran and countries like Venezuela have nationalized their oil companies, so basically we're dealing directly with the nation-states themselves.

In 2008 we sent over $386 billion overseas for oil. That's over a billion dollars a day. When this amount of wealth is being transferred to countries like Iran, we are basically -- we are actually funding both sides of the war against terror. Everybody knows that, it's well known that Iran has funded and trained and supported insurgents in Iraq and in broader Middle East in general. So as I said, we are actually paying people to fight against us.

I applaud the automakers for taking this step and their support of this regulation, and I want to thank the EPA. It's been an honor to testify before another organization whose duty it is to protect the United States and its citizens.

Physicians for Social Responsibility, Los Angeles

[Following comments are from LA Testimony, OAR-2009-0472-7283 p.79-85]

Our organization believes this is a first good step, but it's just the beginning, and stronger action is needed to truly protect public health and create a fleet of vehicles that we need for a greener, healthier future.

Public Citizen and Safe Climate Campaign

The commitment of EPA, NHTSA, CARB, and the auto industry to move forward with these standards to reach 250 grams of carbon dioxide per mile (gCO2/mi) by 2016 would be a historic achievement for climate protection. [OAR-2009-0472-7050.1, p.1]

The agencies? treatment of various details in knitting the programs together will set an important precedent for future rulemakings. We urge the agencies to give careful thought to the structure of this program, with an eye toward additional gains needed beyond the 2016 model year. [OAR-2009-0472-7050.1, p.1]

Sack, Emily

I applaud your work, I don't do technical work, I'm not a politician, but I thank you so much for what you're doing and keep it up. Thank you so much. [OAR-2009-0472-4621, p. 157]

[See Docket Number OAR-2009-0472-4621, pp.154-157 for detailed comments]

Seal, Kathy

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283 p.147]

So I wanted to thank you for giving us some hope, for contemplating and proposing these standards, in the future for implementing them. I'm very happy that they will reduce greenhouse gas emissions equivalent to the shutting down of 200 more coal plants per year. I'm really thrilled about these standards that are being proposed. At the same time, I urge you to make them be implemented very, very strongly without loopholes, without watering them down.

Sierra Club

The Sierra Club, Safe Climate Campaign, Coalition for Clean Air, Alliance for Climate Protection and Environment America applaud EPA and NHTSA for proposing greenhouse gas and fuel economy standards the first outlined in President Obama's historic announcement on May 19, 2009. Achieving the President's goals will reduce America's oil dependence, curb global warming, cut air pollution, save consumers money at the gas pump, and create new auto industry jobs. [OAR-2009-0472-7278.1, p.1]

We applaud the use of publicly available data as the basis for these proposed standards and the fresh look at technologies and costs, which stands in stark contrast to NHTSA's past reliance on confidential product plans and proprietary data. Additionally, we note EPA's ability to set standards that address a range of greenhouse gases, including air conditioning systems and their potent refrigerants. EPA's Clean Air Act authority is an important complement to NHTSA's energy conservation goals and more limited assessment of impacts on CO2 emissions. [OAR-2009-0472-7278.1, p.2]

By accelerating compliance with the 2020 fuel economy target provided in EISA, EPA and NHTSA create the opportunity for going well beyond 35 mpg in 2020 and putting the US auto

industry on a path for longer term transformation. This is the biggest single step we can take to curb global warming, reduce air pollution, cut America's oil dependence, save consumers money at the gas pump, and create new auto industry jobs. [OAR-2009-0472-7278.1, p.2]

EPA and NHTSA have proposed standards for both cars and light trucks in response to the historic May 19th agreement. EPA's proposal to achieve a 250 g/mi CO2e standard is matched with NHTSA's proposal to set CAFE standards. These are welcome standards that come after nearly 3 decades of complete inaction on car standards and incremental change for light trucks. This lack of standards has resulted in a technology backlog which the industry can be apply to cost-effectively meet (and exceed) these proposed standards. Technologies, including high-strength and light weight materials, transmissions, better engines and even tires are available now to move standards higher, faster. [OAR-2009-0472-7278.1, p.2]

The technology exists today to significantly reduce greenhouse gas pollution from new cars and light trucks and to slash our addiction to oil. Existing and emerging technologies will enable automakers to make continuous improvement through 2016 and beyond, while improving safety and consumer choice. The Sierra Club, Safe Climate Campaign, Coalition for Clean Air, Alliance for Climate Protection and Environment America welcome the new National Program and the direction EPA has provided in establishing the first national greenhouse gas standards for cars and light trucks to complement NHTSA's fuel economy program. The MY 2012-2016 standard is a robust start to moving vehicle standards out of the 1970's and into the 21st century. This NPRM establishes a foundation for stronger standards after 2016 that will be put the auto industry on the path to continuous innovation in vehicle technology that will reduce greenhouse gas pollution, curb our addiction to oil and keep billions of dollars here in the US. Including a backstop, fairly considering electric vehicles to avoid the taint of FFV credits, ensuring flexibilities and credits are tied to real reductions, and ensuring standards for the future are technology forcing will help establish a final rule that achieves President Obama's goals – and will both meet the need of the nation to save oil and act swiftly to protect public health and welfare from greenhouse gases. [OAR-2009-0472-7278.1, p.19]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 26-27.]]

And perhaps most importantly for today, as we're in Detroit, these standards will provide automakers with the direction they need to become leaders in efficient vehicles and make Detroit the epicenter of a green industry. These standards acknowledge that our automakers have technologies on the shelf to safely improve fuel economy. Technology such as Ford's EcoBoost engine, continuously variable transmissions, and high strength, lightweight materials will provide consumers with the safe, clean vehicles they deserve. The proposed standards will ensure that these technologies are put to work now and lead to the development and deployment of even more advanced technologies.

[[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, pp. 137-138.]]

I would like to applaud the EPA and DOT on the new vehicle standards that will benefit consumers by allowing us to fill up less at the pump, that will benefit our nation by reducing our dependence on foreign oil, and will benefit the world by reducing pollutants that contribute to global warming.

The EPA and DOT's new vehicle standards are a big step in the right direction. They promote exactly what the world needs right now, real progress towards living without dirty, unlimited energy. Our reliance on polluting fuels now can only lead to disaster in the future.

South Carolina Department of Health and Environmental Control

We commend the EPA and the NHTSA for working together to develop a rule that will result in significant improvements in fuel economy. Our nation needs reduced emissions and energy security and we support these goals. In addition to reducing greenhouse gas emissions, improving fuel economy will have the very important benefit of reducing emissions and helping areas meet national ambient air quality standards for pollutants including ozone and particulate matter 2.5 and will also reduce urban air toxics. These air quality improvements will have a very positive impact on public health and the environment. [OAR-2009-0472-7202.1, p.1]

South Carolina Pulp & Paper Association (SCPPA)

SCPPA supports the National Highway Transportation Safety Administration (NHTSA) moving forward at this time with the Corporate Average Fuel Economy (CAFE) standards as proposed and commends the effort to develop a rule that will result in significant improvement in fuel economy. However, SCPPA has significant concerns with the Greenhouse Gas Emission Standards provisions in the rule, primarily related to greenhouse gases triggering of Title V and New Source Review (NSR) permitting provisions of the Clean Air Act. [OAR-2009-0472-7479, p. 1]

South Carolina Wildlife Federation

Thank you of the opportunity to comment on this extremely important action. We fully support your efforts and request that these new rules and standards be implemented as quickly as the law allows. [NHTSA-2009-0059-0136, p. 2]

Although the formal comment period on the Proposed Rulemaking To Establish Light- Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards closed on November 27,2009, a letter from Robert J Meyers, Principal Deputy Assistant Administrator, EPA to Governor John Engler, President and CEO, National Association of Manufactures, dated November 14,2008 indicates that closure of a formal comment period is not the end of the dialogue or opportunity to provide input on such important issues. We understand that EPA continues to post such comments to the docket and when moving forward with rule making or other actions under the Clean Air Act, will use the entire docket, including late comments, as a resource. [NHTSA-2009-0059-0136, p. 1]

We wish to express our strong disagreement with specific comments critical of EPA transparency and the time allowed for public comments expressed in a November 2 4 2009 letter from the South Carolina Department of Health and Environmental Control (SCDHEC). South Carolina Wildlife Federation fully supports the proposed standards for reducing vehicle greenhouse gas emissions. [NHTSA-2009-0059-0136, p. 1]

We feel that it would be extremely short sighted to delay such regulations based on fear of the potential collateral impacts on state and local air permitting authorities, small business and other stationary sources as requested by SCDHEC. Additional time will not decrease but only serve to increase potential impacts on the economic well-being of our state. It is difficult to understand the position that such regulations would have a detrimental effect on South Carolina's economy, a coastal state, considering the potential impact that increasing green house gases has on extreme weather events such as hurricanes and rising sea levels. [NHTSA-2009-0059-0136, p. 2]

Increasing fees, revising state regulations, getting State legislation enacted, or increasing State employee workload and training expressed by SCDHEC pales in comparison to the troubles our State will face should the new rule not be promulgated. Such impacts are outlined in the final rule for the Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act (Federal Register, December 15,2009). [NHTSA-2009-0059-0136, p. 2]

We find it ironic and unacceptable that SCDHEC, the agency charged with regulating and controlling health and environmental matters in this state, would take such a cavalier attitude towards protecting the health and environment of our citizens. Although new federal legislation on greenhouse gasses may be a preferred solution, there is no assurance that such legislation will pass in the near future. In general terms, the minimum federal environmental and health standards passed down to the respective states is the only protection we can expect as citizens of South Carolina because of SCDHEC's historical reluctance to look at stronger requirements, even when threats are obvious. [NHTSA-2009-0059-0136, p. 2]

South Coast Air Quality Management District

We would also like to urge that EPA and DOT continue to support and strongly coordinate with ARB in the development of new emission standards known in California as Pavley II.

[Comments are from LA Testimony, OAR-2009-0472-7283, pp.59-67.]

Southeastern States Air Resource Managers, Inc. (SESARM)

We commend the U. S. Environmental Protection Agency (EPA) for working closely with the National Highway Traffic Safety Administration (NHTSA) to develop a rule that will result in significant improvements in fuel economy. Our nation needs reduced emissions and energy security and we support these goals. Through gubernatorial and/or legislative mandates, some of our agencies are required to consider effective methods of mitigating greenhouse gas (GHG) emissions, provided the measures do not result in adverse impacts to the economy, environment,

or jobs. We support emission reduction programs that are well designed, complementary, and coordinated. [OAR-2009-0472-7137.1, p.1]

State of California

The attorney general of California is generally supportive of the proposed rulemaking and agrees with comments submitted by CARB. NHTSA and EPA are proposing to adopt California's GHG emission standards on a nationwide basis, and that can only be good for the Earth's Climate, our nation's energy security, and putting money back in consumer's pockets.

State of Connecticut

I write to congratulate you on your groundbreaking joint effort to coordinate two very significant regulatory efforts on vehicle fuel efficiency requirements. (CAFE) and motor vehicle greenhouse gas (GHG) emission standards. Both of these efforts are praiseworthy by themselves; in tandem, you have made a bold statement that energy, the economy and the environment are closely and inexorably linked and our government's policies must reflect this undeniable fact. [OAR-2009-0472-7499, p.1]

State of Connecticut as a front runner in climate change, strongly supports the proposed rule and commends the interagency coordination efforts.

State of Connecticut Department of Environmental Protection

DEP congratulates the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) on your groundbreaking joint effort to coordinate two very significant regulatory efforts on motor vehicle greenhouse gas (GHG) emission standards and vehicle- fuel efficiency requirements (CAPE). The mobile source sector represents a significant source of greenhouse gas (GHG) emissions and in 2007 mobile sources contributed 4396 of GHG emissions in Connecticut. The emission reductions attributable to these rules are necessary for Connecticut to meet its GHG reduction targets and will be similarly critical in meeting national targets once adopted.

DEP believes the Clean Air Act is an appropriate mechanism for regulating GHG emissions. As such, it is critical to maintain the Clean Air Act provisions protecting states' rights to adopt motor vehicle standards - for California under Section 209 and for Connecticut under Section 177. This effort created the technical basis and real world experience critical to the proposed national motor vehicle GHG emissions reduction proposal. Furthermore, as directed by Governor Reli and in accordance with a proposal now being developed by California, DEP will begin a rule making process next year intended to deem vehicles that comply with the new federal standards to be in compliance with our adopted state standards from 2012 through 2016. [OAR-2009-0472-7301, p.1]

DEP also supports comments submitted by NESCAUM. [OAR-2009-0472-7301, p.3]

State of New Jersey

I would like to thank you for this opportunity to testify on the joint proposal of the United States Environmental Protection Agency and the National Highway Transportation Safety Administration to establish light-duty vehicle greenhouse gas emission standards and corporate average fuel economy standards. The Department of Environmental Protection supports the proposed action as a first step in our efforts to combat climate change. New Jersey is a leader in addressing the [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 109.] control of air pollution, including greenhouse gases, and welcomes this opportunity to comment constructively to help advance a harmonization of the federal vehicle control program. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 110.]

Although the Department is supportive of the proposed federal vehicle control program as a powerful first step in addressing greenhouse gas emissions from motor vehicles, additional reductions will be needed for vehicles beyond the model year 2016. New Jersey is committed to working with the U.S. EPA, NHTSA, California Air Resources Board, and other stakeholders to address global climate change and the need to reduce oil consumption by developing strong motor vehicle greenhouse gas standards for model years after 2016. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 113.]

State of Washington Department of Ecology

Ecology especially acknowledges the Obama Administration's historic leadership of bringing together for the first time EPA, NHTSA, California, and the auto industry to reduce this country's greenhouse gas emissions and their contribution to global warming. The proposed standards to reduce GHG emissions from light-duty vehicles in model years 2012 through 2016 are a very critical and commendable first step toward making light-duty vehicles in Washington and our nation as clean as possible. [OAR-2009-0472-7299, p.1]

Steiner, John

Your continued leadership in finalizing protective standards will help wean us off of foreign oil, reduce harmful greenhouse gases, and save families money at the gas pump. [OAR-2009-0472-8705 p.1]

Toyota Motor North America

Last May, Toyota executives joined President Obama, Cabinet members, governors, the California Air Resources Board, other CEOs and environmental leaders to support a commitment to establish a coordinated national program for fuel economy standards and greenhouse gas reductions from passenger cars and light trucks. We encouraged this agreement, which we had sought for a very long time. Without it, our industry would be subject to overlapping and potentially conflicting regulations from two separate federal agencies and over a dozen states. [OAR-2009-0472-7291, p.1]

The Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) have jointly proposed a comprehensive set of regulations to implement this agreement. We support EPA and NHTSA's efforts to harmonize two programs under two quite different statutes and at the same time establish a completely new greenhouse gas (GHG) program for motor vehicles. [OAR-2009-0472-7291, p.2]

Toyota is committed to addressing climate change and oil dependence by increasing the fuel efficiency of our products, developing new markets for advanced vehicle technologies, and reducing the greenhouse gas footprint of our manufacturing and distribution operations. In fact, our top societal priority is sustainable mobility, a stance that transcends our regulatory obligations. To us, sustainable mobility means building vehicles that meet customer needs and expectations, while also being safe, durable, and better for the environment. [OAR-2009-0472-7291, p.2]

To minimize our environmental footprint, we are accelerating the roll-out of conventional hybrids across our entire line-up. In addition, we are pursuing hydrogen fuel cells, plug-in hybrids, pure electrics and advanced batteries beyond lithium ion - all with the goal of overcoming the barriers that currently prevent their mass deployment. On the operational side, we've already cut carbon dioxide (C02) emissions and energy use from our manufacturing plants on a per vehicle produced basis by 19% since 2000. [OAR-2009-0472-7291, p.2]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 51-54.]

We welcome the development of a single coordinated fuel economy and greenhouse gas standard. This agreement is something we have encouraged and sought for a very long time, and it is a landmark achievement for all of us. Without it, we would be subject to overlapping and in places conflicting regulations from two separate Federal agencies and over a dozen states. In exchange for eliminating the patchwork, we agreed to pull forward the ambitious fuel economy targets set by Congress for 2020 to 2016.

We applaud the efforts NHTSA and EPA have made to unify two programs under two quite different statutes, and to establish a completely new EPA program for motors vehicles. The proposed regulations appear to capture the key elements of our historic agreement, including the various compliance flexibilities that were integral to reaching a consensus. We therefore believe the proposal sets the stage for a successful final joint rulemaking that will provide certainty for our product planners and significant environmental and energy benefits for our nation and the world. We are now examining the details of this complex proposal, and to the extent that issues need to be clarified we will be submitting written comments.

Make no mistake, meeting the overall fleet average of 35.5 mpg by 2016 will be a challenge for our engineers and product planners. It will require every ounce of their ingenuity and creativity. In the end, consumers will be the true beneficiaries of this program. A unified national program ensures American consumers will have the choice of vehicles they need and want, as well as the fuel efficiency and low emissions they expect, without the confusion of multiple standards.

That's why the process of collaboration must continue beyond 2016 and we must continue to seek additional areas of harmonization between the two programs.

Now I would like to step back and comment from a broader perspective just a moment. The fact that diverse groups could find common ground on these challenges is a notable example of how government and industry can -- and should -- work. It illustrates one of the cornerstones of how Toyota approaches public policy, by fostering partnerships, with government, universities, non-profits, and other companies. The other cornerstone is a long-range planning for and investing in the future. At Toyota, we don't stop at regulatory compliance nor do we wait for government regulation to address the challenges of tomorrow's transportation.

Our top public policy priority is sustainable mobility. That means building vehicles that meet customer needs and expectations, while also being safe, durable, and better for the environment. To minimize our environmental footprint, we are accelerating the roll-out of conventional hybrids across our entire vehicle lineup. In addition, we are pursuing hydrogen fuel cells, plug-in hybrids, pure electrics, and advanced batteries beyond lithium ion -- all with the goal of overcoming the barriers that currently prevent their mass deployment.

Sustainability mobility defines where we are today and where we plan to be in the future: We are the leader in fuel-efficient vehicles in the U.S. We are the leader in hybrid technology, having launched our first hybrid a dozen years ago and put more than 2 million in the worldwide market to date. We are bringing a plug-in, a pure EV, and other advanced technologies to market in the near future to complement our hybrid dominance. And we've already cut CO2 emissions and energy use from our manufacturing plants on a per vehicle produced basis by 19 percent since the year 2000. Just yesterday Toyota became the first car manufacturer to join the SmartGridCity in Boulder, Colorado. 10 plug-in Prius hybrid electric vehicles will help teach us how to reduce carbon emissions and our dependence on foreign oil, while at the same time, not just meet, but exceed customer expectations.

We believe it is important to keep in mind that the road to sustainable mobility is a long one, and it is not one, but actually two separate and distinct roads traveling in the same direction. One road is the path to compliance. The other is the path to market preparedness. One is constructed to meet the priorities of government regulation. The other is constructed to search out and respond to the specific needs and desires of the consumer.

I believe we need both of these roads to arrive together in the same place to realize the goal of sustainable mobility.

Transportation and Buildings Policy for the State of Massachusetts Executive Office of Energy and Environmental Affairs

The benefits of this proposal will be far-reaching: Significant reductions of greenhouse gases, improved fuel economy and lowered cost for the nation's drivers, reduced demand for imported oil and economic growth for the development of advanced vehicle technologies. [OAR-2009-0472-4621, p.19]

Thus, Massachusetts strongly supports the work of the federal agencies in moving forward with this proposed joint rulemaking. In addition to harmonizing federal regulations, this rulemaking would for the first time align the federal motor vehicle standards with the greenhouse gas [OAR-2009-0472-4621, p.20] standards adopted by the California Air Resources Board and the Section 177 states, a group that includes Massachusetts and 13 other states which have adopted these more stringent standards. [OAR-2009-0472-4621, p.21]

In conclusion, Massachusetts fully supports the Obama Administration and the proposed rulemaking of EPA and NHTSA. [OAR-2009-0472-4621, p.26]

I want to emphasize the importance of moving forward with national regulations at this time. Climate change is the most critical environmental issue of our time and the time is now to act to address it. [OAR-2009-0472-4621, p.26]

U.S. Coalition for Advanced Diesel Cars

The Coalition supports the twin national objectives of reducing green house gas (GHG) emissions and petroleum fuel consumption by the U.S. light duty vehicle fleet. To that end, the Coalition urges EPA to adopt fuel-neutral policies, standards and reality-based vehicle ratings that will promote vigorous technology competition in the market place. Failure to adopt fuel-neutral policies and reality-based vehicle ratings will undermine consumer choice and drive a systematic shortfall in achieving the benefits promised by the new rulemaking. [OAR-2009-0472-7496, p.1]

The success of the new rules will ultimately be judged by reductions in real-world petroleum barrels and real -world GHG tons. Moreover, the recovering auto industry cannot afford to make investment decisions based on EPA data without an assurance that those decisions will make long-term business sense. This is in stark conflict with President Obama's call for rules that will 'give our auto companies some long-overdue clarity, stability and predictability.' [OAR-2009-0472-7496, p.2]

Union of Concerned Scientists

UCS applauds the work of both agencies for moving quickly to issue the proposed rulemaking to make President Obama's commitment a reality. Overall, the proposed rule takes a dramatic step forward. However, certain aspects of the rule could erode the potential benefits unless they are effectively implemented and enforced. In order to maximize the environmental, economic, and security benefits of this program, it is critical that the 250 grams per mile goal is achieved. [OAR-2009-0472-7181.1, p.1]

We would like to commend the agencies in general on their noticeable efforts to provide high levels of transparency in the proposed rulemaking, and particularly to laud EPA for its detailed and thoroughly credible assessments of technology availability and technology cost. We would like to compliment EPA on its approach of basing its finding not upon confidential business information, as has been the practice of NHTSA in recent rulemakings, but rather upon well documented, proven, and transparent findings. [OAR-2009-0472-7181.1, p.12]

[Union of Concerned Scientists also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 91-92.]

United Auto Workers

The UAW commends both agencies and the Obama administration for putting forth a proposal that provides for a national system of fuel-economy and greenhouse gas emission regulations. This will avoid a confusing and costly patchwork of federal and state regulation of light-duty vehicle fuel economy and greenhouse gas emissions. This proposal contains the features of the historic stakeholder agreement that that was announced by President Obama in May, 2009. It will benefit the nation by reducing oil consumption and greenhouse gas emissions. In particular, it will save more fuel and avoid more greenhouse gas emissions than would have been the case under a state and federal regulatory patchwork. This is because it extends tougher standards across the entire nation rather than having them limited to a minority of states that would have chosen to follow the standards promulgated by the State of California. At the same time, by establishing a unified national system the regulations will make it easier for automakers to meet the tougher standards. This will facilitate investment and production in the auto sector, and help to preserve and create jobs for American workers. [OAR-2009-0472-7056.1 p.1]

University of Miami, School of Law

We support the proposed EPA and NHTSA rule and encourage the Obama administration to continue to find ways to curb the pollution that causes global warming. These proposed standards allow automobile manufactures to utilize technologies that will reduce vehicle GHG emissions and improve fuel economy. The EPA proposal would require vehicles to meet an estimated combined average emissions level of 250 grams/mile of CO2 in model year 2016. The NHTSA proposal would require car manufacturers to meet an estimated combined average fuel economy level of 34.1 mpg in model year 2016. [OAR-2009-0472-6770, p. 1]

University of Michigan Transportation Research Institute (UMTRI)

The National Program is supposed to establish strong and coordinated federal greenhouse gas and fuel economy standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles. For the National Program to be successful, stakeholders with diverse interests and views need to cooperate. EPA, NHTSA, CARB, and the automakers are to be commended for the cooperative beginning of the joint rulemaking process for managing automotive CAFE and GHG emissions standards. [OAR-2009-0472-3651.1, p.1]

[[UMTRI also submitted these comments as testimony at the Detroit public hearing, See docket number OAR-2009-0472-6185, pp. 33.]

University of Pennsylvania, Environmental Law Project

Some of the changes brought about this legislation could supplant a regulatory scheme established by this rule by enforcing cap-and-trade strategies for carbon emissions across broad sectors of the economy. However, given that the Senate has yet to act, there remains a great deal

of uncertainty in both timing of final passage and the content of specific provisions. This rule is a useful step forward in reducing GHGs, and marks important redefinitions of the scope and relevance of existing statutory provisions. [OAR-2009-0472-7286.1, p. 4]

Undoubtedly, the United States must adopt policies that address global climate change and reduce its oil consumption. These proposed rules, developed in response to President Obama's call for a National Fuel Efficiency Policy, constitute a strong and coordinated federal fuel economy and GHG program for passenger cars and light trucks. Since the proposed rules will provide regulatory certainty and consistency for the automobile industry while reducing greenhouse gas emissions based on technologies that can be incorporated at reasonable cost, the proposal represents an important effort to improve fuel economy and reduce greenhouse gas emissions. [OAR-2009-0472-7286.1, p. 14]

It is critically important that the United States adopt policies that address global climate change and reduce its oil consumption. These proposed rules constitute a strong and coordinated federal fuel economy and GHG program for passenger cars and light trucks. Since the proposed rules will provide regulatory certainty and consistency for the automobile industry while reducing greenhouse gas emissions based on technologies that can be incorporated at reasonable cost, the proposal represents an important effort to improve fuel economy and reduce greenhouse gas emissions. [OAR-2009-0472-7286.1, pp. 21-22]

However, the proposal is not without its flaws. Namely, the proposal fails to gradually reduce the disparity between efficiency requirements for 2012 and 2016 MYs. Additionally, the policy does not create mechanisms whereby minimum reductions are ensured, nor does it address the fiction of "zero emissions" electric vehicles. Finally, the proposal fails to make a complete lifecycle impact analysis, and therefore may overlook deleterious consequences of its implementation. Thus, the proposal, while timely, would benefit from an enhanced discussion of these among other potentially problematic omissions. [OAR-2009-0472-7286.1, p. 22]

US Steel Corporation

U. S. Steel supports the intent of the Clean Air Act and the Energy Independence and Security Act (EISA) of 2007, which together have formed the basis of this proposed rulemaking on greenhouse gas emissions and fuel economy standards. We support EPA and NHTSA for proposing a common national standard for light-duty vehicles (passenger cars, light-duty trucks, and medium duty vehicles) and avoiding a patchwork of state and federal regulations that would have added complexity and cost to compliance efforts. The proposed rule is aimed at leading our nation to greater energy independence and our world to a condition of lower emissions and a cleaner environment. It is important, however, to carefully analyze the methodology selected for enforcement of the intended rules in order to ensure that the methods are technically sound, economically feasible, and of sufficient scope to avoid unintended consequences that oppose the objectives of the regulations. The purpose of these comments is to place on the record our analysis concerning the likely impact of the proposed CAFE regulations on the steel industry, on the economy, and on the emissions of CO2 and reduction of energy use. [OAR-2009-0472-7197.1 p.2]

Volkswagen Group of America (Volkswagen)

First, as a general comment Volkswagen supports the framework of this proposed regulation and strongly supports GHG and CAFE regulations under a National structure. Volkswagen participated in the negotiations to make a National program a reality and believes a National solution to controlling both GHG emissions and fuel economy regulations is the best arrangement for all parties. Volkswagen appreciates the efforts of the White House, the Federal agencies, the state of California, the auto industry and other involved stakeholders in making a National Program possible. [OAR-2009-0472-7210.1, p.2]

The proposed regulation is significant and historic. With this joint notice, EPA and NHTSA have proposed stringent standards that will be challenging for the auto industry. The regulation is technology forcing and will increase the initial purchase cost of vehicles in the future. It also represents a major change in the treatment of fuel economy regulations and GHG emissions from the light-duty transportation sector. Despite the development tasks and challenges the proposed regulation represents, Volkswagen supports the overall framework and balance of the regulation. [OAR-2009-0472-7210.1, p.2]

In addition, Volkswagen supports the continuation of a National Program beyond the 2016 MY limit of this NPRM and urges all stakeholders to work towards that goal. Volkswagen pledges to support and contribute to efforts to put a National Program in place for 2017 model year and beyond. [OAR-2009-0472-7210.1, p.2]

Volkswagen supports the efforts of both agencies to harmonize the GHG and the CAFE program as much as possible under the regulatory constraints in place for both regulations. Volkswagen especially supports the work by both agencies to form their respective regulations to allow averaging, banking and trading as similar as possible in both programs, and to provide as many credit flexibilities as possible that accommodate the wide range of manufacturers. [OAR-2009-0472-7210.1, p.2]

Volkswagen commends both NHTSA and EPA in their efforts to harmonize the GHG and CAFE programs in this joint notice. While stringent, we support the overall level of the standards proposed. We also support the efforts to allow as much flexibility as possible and we urge the agencies to maintain the credit flexibilities proposed in the joint NPRM. Due to the major change to the treatment of GHG and CAFE regulations this regulation represents, we believe the flexibility in the proposed regulations are essential to allowing all manufacturers the time and tools needed to adjust to the new era of regulation for GHG emissions and fuel economy. [OAR-2009-0472-7210.1, p.10]

Volkswagen remains committed to working with EPA and NHTSA staff to establish the best regulation possible to achieve the goals of the country in a fair and balanced manner. Volkswagen also supports efforts to continue a National program in 2017 MY and beyond. [OAR-2009-0472-7210.1, p.10]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 112-113.]

Make no mistake, this regulation is very challenging, but we support a national solution to greenhouse gas and fuel economy regulation and we support the lead time and stability of the proposed regulation through the 2016 model year.

The Volkswagen Group urges all stakeholders to continue developing this program and working towards a National Program for 2017 and beyond. In particular, Volkswagen supports the government's efforts and the NPRM to provide the flexibility to the regulation that helps manufacturers transition to the proposed national greenhouse gas/CAFE program.

The government correctly recognized that auto manufacturers are a diverse group representing many different market segments and different sales volumes in the U.S. market. In recognizing these differences, the agencies were able to develop credit banking and trading schemes that offer real greenhouse gas reductions and provide all manufacturers flexibility in complying with the regulation and with various credit pathways.

Washington State Department of Commerce

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.121-122]

The Washington State Department of Commerce is really happy with EPA and NHTSA working together toward a national plan.

Almost half of the greenhouse gas emissions in the State of Washington come from transportation. Therefore, we view efficiency as a key tool for the mitigation of these emissions. We are therefore very supportive of the development of the national plan, and we look forward to working with you on improving the proposed rule.

The State of Washington also recognizes the work that the car industry will make to meet the new standards. We believe that states also have a role in helping the success of this program by incentivizing the adoption of cleaner vehicles and partnering with industry to help on the deployment of advanced technology vehicles.

Setting vehicle performance standards is one important step toward achieving our fuel economy and greenhouse gas emission goals. However, our information says that this will not be enough to address the problems of greenhouse gas emissions from road transportation.

Webb, Alysha

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.129-130]

And as I mentioned before, automakers have the technology to achieve these standards. We've heard from a number of automakers here. They don't oppose them, but they need some certainty. So I think these standards are very important because they're going to give the automotive industry some certainty.

So, again, I thank you for supporting the greenhouse gas standards, but I urge you not to emasculate them by granting too many tax credits or too many credits or making implementation too flexible.

There are a lot of areas in which I wish China would emulate U.S. policy more closely, but where greenhouse gas emission standards are concerned, thankfully the U.S. is in some ways following China.

But, most importantly, I urge you to continue to follow California's example in this as you consider policies for the future.

Weiner, Jill

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.87-89]

I am happy that the Pavley standards are the basis for a new national standard, and I want to applaud the administration and the auto industry for working together to reach an agreement.

I'm excited to see how the automakers will apply existing and new technologies to meet these standards, and I'm looking forward to replacing my 1998 model with a cleaner, more efficient car in the near future.

That being said, I urge you to make sure that the details of the program are such that we do, in fact, meet the goals, both in terms of emission reductions and oil savings. Please do not allow loopholes or excessive credits to dilute the program's results. For electric vehicles, the EPA needs to consider the source of electricity and accurately account for how that power is generated just as the Pavley standards do.

Winograd, Marcy

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.159-163]

I am here today to applaud the EPA and the Department of Transportation and encourage you to work vigorously and meaningfully to achieve significant reductions in global warming pollution.

While I am greatly encouraged by the proposed standards, we must be on guard to weed out the devil in the details that inevitably surface in situations like these.

EPA Response:

Many commenters expressed support for the program in general, as well as for various specific provisions the rule. Most of these commenters also had concerns about some relatively detailed provisions of the rule -- which we address elsewhere in this document and in the preamble to the rule -- but were supportive of the overall program.

These commenters were supportive of several key aspects of the rule including the following:

- The stringent level of the emission standards, which received support from states, environmental organizations, and many others for the large greenhouse gas emission reductions that will result,
- EPA's assessments of costs and GHG-reducing technologies, including support from auto industry stakeholders,
- EPA's adopting of attribute-based standards, and using footprint at the sole attribute,
- EPA's overall analytical approach to establishing the target emission levels, which the industry either supported or was silent about, and
- The successful effort to develop a coordinated single National Program that avoids the need for manufacturers to comply with separate NHTSA, EPA, and state emission requirements.

1.2. General Opposition

Organization:

American Chemistry Council (ACC)
Arizona Public Service (APS)
Devon Energy Corporation
Duke Energy
Fertilizer Institute
Hagen, David L.
Heritage Foundation
Industry Coalition
Mass Comment Campaign (48) (unknown organization)
Mississippi Department of Environmental Quality
National Automobile Dealers Association (NADA)
National Climate Coalition
Process Engineers
Shaw, Donald F.
Spurgeon, C. M.
Texas Industry Project (TIP)

Comment:

American Chemistry Council (ACC)

The Associations acknowledge EPA's desire to address GHG emissions from mobile sources quickly, as well as NHTSA's need to set new fuel economy standards, which must be [OAR-2009-0472-7148.1, p.1] promulgated at least 18 months before the affected model year (in this case the 2012 model year). 49 U.S.C. § 32902(g)(2). However, as proposed, the Motor Vehicle Rule ignores the enormous burdens the Rule would impose on stationary sources. This omission violates legal requirements for agency rulemaking, constitutes arbitrary and capricious action,

and is simply bad policy. This is especially so because nearly all the environmental benefits EPA says will result from its promulgation of the Motor Vehicle Rule under CAA authority would also result from the NHTSA rule alone. Yet, unlike NHTSA action to raise corporate average fuel economy (CAFE) standards, the redundant EPA standards promulgated under the CAA would have regulatory impacts reaching far beyond the automotive industry and would impose billions of dollars in additional permitting and compliance costs. [OAR-2009-0472-7148.1, p.2]

Thus, although the Associations take no position on NHTSA's proposal to increase CAFE standards, we vigorously object to EPA's proposal to finalize the superfluous Motor Vehicle Rule under CAA Section 202. EPA's failure to account here for the PSD and Title V burdens it elsewhere acknowledges will flow from this rulemaking renders this rulemaking legally invalid. EPA must fully consider those burdens in this rulemaking. [OAR-2009-0472-7148.1, p.2]

[See Docket number OAR-2009-0472-7148.1, cover page 1-2 for detailed comments]

Arizona Public Service (APS)

APS has significant concerns regarding the proposed Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. Specifically, a comparison of the proposed benefits resulting from the EPA program to the NHTSA program reveals the programs to be virtually identical and that EPA's proposal provides no apparent additional benefit. For this reason, APS believes that EPA's action is simply a means to regulate greenhouse gas emissions from stationary sources through the Clean Air Act Prevention of Significant Deterioration (PSD) and Title V permit programs. As such, APS also believes the economic and environmental cost and benefits analysis of this joint proposal fails to assess impacts on stationary sources. [OAR-2009-0472-7107.1, p.1]

If this rule is finalized, a significant number of stationary sources will become subject to PSD and Tide V permitting requirements. However, EPA did not include the economic and environmental consequences of triggering these rules. It is APS' position that EPA either withdraw its portion of the rule or perform a thorough economic and environmental cost and benefit analysis, and provide an adequate public notice and comment period to address the impacts to stationary sources. [OAR-2009-0472-7107.1, p.1]

Devon Energy Corporation

Many scientists (myself included) doubt the "consensus" that CO2 contributes significantly to atmospheric warming. The Earth has been warming ever since the last ice age ended, roughly 12,000 years ago in fits and starts, and it is definitely not proven that man-made CO2 is a significant contributor to the current warming trend (last 100 years or so). But, for the sake of argument, let's assume that CO2 does matter. Further, let's assume that global warming is a problem (this is not proven either). Let us also assume that additional CO2 is not a benefit to plant life, this is crazy, since it is one of their main foods, but let's assume this. Even with these assumptions, the Environmental Protection Agency (EPA) is not justified in regulating carbon dioxide emissions from vehicles. These regulations will only increase the cost of our cars, harm

our economy, and limit our transportation options. We need efficient, affordable transportation to rebuild our economy and create American jobs.

According to the proposed regulations, EPA wants to regulate carbon dioxide emissions from cars and trucks, "because of the critical need to address global climate change." (74 Fed. Reg. 49454).This regulation does not achieve EPA's stated goal because, according to EPA data, it does not reduce global warming or sea level rise in a meaningful way. The regulation states that the carbon dioxide reductions "are projected to reduce global mean temperature by approximately 0.007–0.016°C by 2100, and global mean sea level rise is projected to be reduced by approximately 0.06–0.15 cm by 2100." [OAR-2009-0472-10450 p.1]

Duke Energy

Duke Energy Business Services LLC ("Duke Energy"), on behalf of Duke Energy Carolinas, LLC, Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., and Duke Energy Generation Services ("DEGS"), therefore submits the following comments on the Joint Motor Vehicle Proposal. Specifically, the significant flaws and shortcomings of the Joint Motor Vehicle Proposal necessitate the withdrawal of EPA's portion of the proposed rule. Duke Energy continues to support the enactment of environmentally and economically sustainable federal climate change legislation. Regulating GHGs under the CAA is the wrong approach. [OAR-2009-0472-7136.1, p.2]

The U.S. Environmental Protection Agency's ("EPA") has stated its view that promulgation of the GHG motor vehicle standards will subject GHGs to the CAA Prevention of Significant Deterioration ("PSD") program and the permitting requirements of Title V of the CAA, potentially as soon as the date on which the rule becomes final and effective. Duke Energy believes, however, that EPA's legal positions in this regard and the analysis presented in the proposed rule are seriously flawed and must be corrected. [OAR-2009-0472-7136.1, p.2]

The Joint Motor Vehicle Proposal and its supporting documentation makes clear that EPA's proposed GHG motor vehicle emission standards are largely duplicative of NHTSA's proposed program and that EPA's proposal will not add in any significant manner to the GHG reductions and associated impacts of NHTSA's proposed CAFE standards. Therefore, EPA cannot properly reach an affirmative endangerment finding to satisfy the requirements of the CAA's test for finding "endangerment," rendering EPA's proposed GHG motor vehicle emission [OAR-2009-0472-7136.1, p.2] standards legally (and scientifically) unjustified. Because an affirmative endangerment finding cannot be legally made, EPA lacks the authority to finalize its proposed GHG motor vehicle standards under section 202(a) of the CAA. [OAR-2009-0472-7136.1, p.3]

Fertilizer Institute

TFI supports the comments submitted by the National Mining Association on this NPRM. TFI believes that GHGs should be evaluated and, if necessary, regulated under comprehensive climate change legislation and not under the piecemeal, command and control approach of the CAA and other existing statutory programs. Finally, it appears the economic impacts of the rulemaking have not been fully evaluated. [OAR-2009-0472-7279.1, p.2]

Hagen, David L.

I petition the Environmental Protection Agency (EPA) to reject regulating carbon dioxide emissions from vehicles as unjustified. Such regulations unnecessarily harm the economy, limit transportation, increase the cost of vehicles and reduce jobs. EPA proposes to regulate carbon dioxide emissions from cars and trucks, "because of the critical need to address global climate change." (74 Fed. Reg. 49454). This is a false very weakly founded basis. [OAR-2009-0472-7218.1, p. 1]

Futile regulation The proposed regulation will fail to achieve EPA's stated goal. EPA's regulation states that the carbon dioxide reductions "are projected to reduce global mean temperature by approximately 0.007–0.016°C by 2100, and global mean sea level rise is projected to be reduced by approximately 0.06–0.15 cm by 2100." This is a negligible result will not affect global climate at all nor will they affect "public health and welfare" (See Clean Air Act Sec. 202). [OAR-2009-0472-7218.1, p. 3]

This will cause a massive constraint and financial impact. The National Highway Safety Administration (NHTSA) estimated that increasing fuel economy standards to 35 miles per gallon by 2020 would cost the car companies $114 billion. (See Detroit News, "Fuel Plan Would Cost Big Three" (March 1, 2007). EPA and NHTSA's plan will increase costs for car companies and further reduce auto company jobs. Higher priced cars and trucks will make life more difficult for American families who need affordable transportation options. [OAR-2009-0472-7218.1, p. 3]

EPA would be forced to regulate greenhouse gases under Clean Air Act, sections 108, 111, and 112. This would seriously harm our economy, reduce American jobs, and worsen our employment situation. [OAR-2009-0472-7218.1, p. 3]

I pray the EPA not to regulate carbon dioxide or greenhouse gas emissions under the Clean Air Act. These regulations would severely worsen our economy, and massively increase our high unemployment. It would result in negligible reduction in global temperature while diverting effort from the critical issue of providing alternative fuels to manage global peaking of light oil. [OAR-2009-0472-7218.1, p. 3]

Heritage Foundation

We are writing out of serious concern for the unintended consequences along with negligible environmental benefits likely to result if the Environmental Protection Agency moves forward with its Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. It is unnecessary to move up the timeframe to create a 35.5 miles per gallon vehicle fleet from 2020 to 2016 - a standard initially put into place by Energy Independence and Security Act of 2007. The new regulations will create headaches for struggling automakers, and those automakers will simply pass on higher costs to the consumers.

The EPA estimates that the averaged increase cost of a vehicle will be $1,300 in 2016 compared to today's prices but because consumers will save $2,800 on gas that will offset the increased purchase price. One senior manager from General Motors' energy center said meeting the 2020 goal would cost $5,000 to $7,000 to make more fuel efficient cars and light trucks. Moving the deadline up four years would only exacerbate these costs

The environmental benefits are dubious as well. Touted as a measure to curb global warming, fuel efficiency standards have very little environmental impact. Newer vehicles with better efficiency standards may emit less carbon dioxide per mile, but increased fuel efficiency often leads to more driving and new cars constitute a miniscule source of overall carbon dioxide emissions. The EPA's own regulation states that "the rule will lead to global mean temperature being 16 thousandths of a degree Celsius lower (0.016°C) in 2100." [OAR-2009-0472-7052.1, pp.1-2]

Industry Coalition

The Associations acknowledge EPA's desire to address GHG emissions from mobile sources quickly, as well as NHTSA's need to set new fuel economy standards, which must be [OAR-2009-0472-7673.1, p.1] promulgated at least 18 months before the affected model year (in this case the 2012 model year). 49 U.S.C. § 32902(g)(2). However, as proposed, the Motor Vehicle Rule ignores the enormous burdens the Rule would impose on stationary sources. This omission violates legal requirements for agency rulemaking, constitutes arbitrary and capricious action, and is simply bad policy. This is especially so because nearly all the environmental benefits EPA says will result from its promulgation of the Motor Vehicle Rule under CAA authority would also result from the NHTSA rule alone. Yet, unlike NHTSA action to raise corporate average fuel economy (CAFE) standards, the redundant EPA standards promulgated under the CAA would have regulatory impacts reaching far beyond the automotive industry and would impose billions of dollars in additional permitting and compliance costs. [OAR-2009-0472-7673.1, p.2]

Thus, although the Associations take no position on NHTSA's proposal to increase CAFE standards, we vigorously object to EPA's proposal to finalize the superfluous Motor Vehicle Rule under CAA Section 202. EPA's failure to account here for the PSD and Title V burdens it elsewhere acknowledges will flow from this rulemaking renders this rulemaking legally invalid. EPA must fully consider those burdens in this rulemaking. [OAR-2009-0472-7673.1, p.2]

Mass Comment Campaign (48) (unknown organization)

The Environmental Protection Agency (EPA) is not justified in regulating carbon dioxide emissions from vehicles. These regulations will only increase the cost of our cars, harm our economy, and limit our transportation options. We need efficient, affordable transportation to rebuild our economy and create American jobs.

According to the proposed regulations, EPA wants to regulate carbon dioxide emissions from cars and trucks, 'because of the critical need to address global climate change.'(74 Fed. Reg. 49454).This regulation does not achieve EPA's stated goal because, according to EPA data, it does not reduce global warming or sea level rise in a meaningful way. The regulation states that

the carbon dioxide reductions 'are projected to reduce global mean temperature by approximately 0.007-0.016°C by 2100, and global mean sea level rise is projected to be reduced by approximately 0.06-0.15 cm by 2100.'

To be clear, EPA is proposing to increase the price of automobiles by $1,100 per car (74 Fed. Reg. 49460) in exchange for (according to EPA) a global temperature decrease of 16 thousandths of a degree Celsius in 90 years. Also, according to EPA, sea level won't rise by an extra 1.5 millimeters. These tiny amounts are so inconsequential that they will not affect global climate at all nor will they affect 'public health and welfare' (See Clean Air Act Sec. 202).

The proposed regulations will harm our economy. A few years ago, the National Highway Safety Administration (NHTSA) estimated that increasing fuel economy standards to 35 miles per gallon by 2020 would cost the car companies $114 billion. (See Detroit News, 'Fuel Plan Would Cost Big Three' (March 1, 2007). Inexplicably, today NHTSA claims that achieving the 35 miles per gallon fleetwide standard by 2016, four years earlier, would cost only $60 billion. (75 Fed. Reg. 49479). This change from NHTSA is not credible. The cost of technology-forcing regulations do not decrease by half as a result of companies only having half the time to comply with the regulations.

EPA and NHTSA's plan will increase costs for car companies and further reduce auto company jobs. Higher priced cars and trucks will make life more difficult for American families who need affordable transportation options.

To make matters worse, these regulations would start a regulatory cascade. EPA would start regulating emissions from millions of sources, including large buildings, churches, sports arenas, office buildings, farms, schools, hospitals' you name it. EPA will be forced to regulate greenhouse gases with many sections of the Clean Air Act, including sections 108, 111, and 112. This will further harm our economy, reduce American jobs, and worsen our employment situation. NHTSA already has the ability to regulate fuel economy without EPA further harming the economy.

Lastly, we care about our families' safety as much as the Secret Service cares about the President's safety. There is a clear correlation between size and weight of a vehicle and its safety. That is why the President's limo only gets a reported 8 mpg, not 35 mpg. The Secret Service should not have to cut corners in keeping the President safe, just as we should not have to cut corners to keep our families safe.

EPA should not regulate carbon dioxide or greenhouse gas emissions under the Clean Air Act. These regulations will make our high unemployment even worse. It does not make sense for EPA to reduce American jobs, increase the price of cars and trucks, and make America less economically competitive in exchange for an immeasurable and meaningless reduction in global temperature. [OAR-2009-0472-10556, pp.1-2]

Mississippi Department of Environmental Quality

In summary, it does not appear that EPA has properly evaluated the impacts of this rulemaking on state and local agencies and therefore failed to meet the obligations of the Unfunded Mandates Reform Act. The potential effects of this rulemaking on state and local agencies as well as small business that would be subject to the CAA could be disastrous, especially in today's economic climate. It also does not appear to be necessary to set GHG emissions standards to obtain the goals of reduced air emissions and increase fuel economy. It is not necessary for EPA to act now to meet any statutory requirements. Therefore, EPA should not set the proposed GHG emission standards for Light Duty Vehicles at this time. [OAR-2009-0472-7102.1, pp.1&5]

National Automobile Dealers Association (NADA)

Since dealers are impacted directly by vehicle production mandates, a National Program must carefully account for potential dealership impacts and concerns. In-use passenger car and light truck fuel economy and GHG performance will continue to improve as older, less fuel-efficient vehicles are replaced by newer ones offering comparable performance with improved fuel economy. To avoid impeding fleet turnover, a National Program must not unduly restrict product availability, reduce product performance, or increase product price. [OAR-2009-0472-7182.1, p.11]

National Climate Coalition

The Clean Air Act Is Flawed and National Legislation Is The Best Mechanism For Regulating Greenhouse Gases

Stabilizing atmospheric greenhouse gas concentrations will require the transformation of our energy, manufacturing and transportation systems. We believe that this is the work of Congress. Federal legislation should not only take a broad, flexible multi-sector approach, but also must be designed to meet multiple objectives, including energy and transportation security, reliability and affordability; ensuring the economic competitiveness of United States businesses; energy conservation; strategic technology development; and environmental performance. Such legislation should also allow for and define the appropriate involvement of other departments and agencies with expertise in energy, environment, security and transportation in addition to EPA – something that is necessary yet not permitted under the Clean Air Act. Our highest priority must be for Congress to establish a uniform national program that will be consistent with the emerging and overarching international framework. [NHTSA-2009-0059-0086.1, p.4]

For a variety of reasons, the existing Clean Air Act is a poor mechanism for addressing climate change. Congressional intent in drafting the Clean Air Act was to identify and regulate sources based on their relatively large emissions. Such sources typically have also been financially able to bear the costs of regulation. By establishing major source thresholds, the Act excluded from regulation the large numbers of smaller sources that exist in the United States. The number of stationary sources subject to regulation has thus historically been relatively small. By all estimates, however, this number could grow by at least an order of magnitude, perhaps two, and affect for the first time many previously unaffected sources (e.g., large retail establishments, schools, hospitals and government facilities) if greenhouse gases are regulated in the same

manner as criteria pollutants under NSR, and Title V — let alone §112, which has even lower thresholds for regulation. [NHTSA-2009-0059-0086.1, pp.4-5]

The permitting thresholds under the Act, however, are keyed to emissions levels that are meaningful only in the context of regulating the local and regional health and welfare impacts of lower-emitting criteria or hazardous air pollutants. Even small sources have emissions of CO2 as a result of typical fuel use that would exceed current permitting thresholds on this basis. As EPA itself underscored in the ANPR and the Tailoring Rule Proposal, the PSD and Title V programs would sweep hundreds of thousands of sources not previously subject to regulation into the scope of the Clean Air Act, at great cost and consequence for the functioning of the economy and at great administrative burden on regulated sources, EPA, the states and local governments. EPA estimates that its approach in the Tailoring Rule would avoid over $55.6 billion in the first six years of regulation – or, stated differently, in the absence of the Tailoring Rule, the cost of compliance for affected sources and permitting agencies will increase by more than $55.6 billion. [NHTSA-2009-0059-0086.1, p.5]

Paradoxically, forcing the square peg of greenhouse gas emissions into the round hole of the existing Clean Air Act also has the potential to create adverse incentives that may stifle innovation and even increase greenhouse gas emissions. This could occur, for instance, if a company decides to delay improvements that would otherwise reduce emissions intensity to avoid triggering regulatory requirements, as we have seen occur time and time again under the New Source Review programs. A practical example of this situation is a turbine upgrade at an electric generating station. While the project results in more efficient production of electricity, if that energy efficiency were projected to result in more criteria pollutant emissions on an annual basis due to increased operations, it is likely the project would not be pursued due to the time consuming and expensive requirements of the New Source Review programs, including the likely need to implement additional controls for all pollutants that exceed the NSR pollutant thresholds. That is contrary to the desired outcome. [NHTSA-2009-0059-0086.1, p.5]

Regulation under the Clean Air Act has historically focused on control of criteria and hazardous air pollutants to address the local or regional human health, welfare and environmental impacts. The architecture of the Clean Air Act is thus premised on the concept that state, regional and federal control of emissions will improve air quality in the corresponding area. This is not accurate as to greenhouse gases. The greenhouse effect is global -- and localized (or even United States-wide) emissions reductions will not result in environmental benefits to the United States in the absence of corresponding international action. Moreover, greenhouse gases at current and projected atmospheric concentrations have no known direct adverse human health impacts to which to link standards, and any environmental and welfare impacts only occur over substantial time, due to the indirect effects of aggregate global levels of greenhouse gases. Thus, greenhouse gases present a particular regulatory challenge. The same requirements that apply to emissions of criteria pollutants from stationary sources are not likely optimally to control and provide the most effective incentives to reduce greenhouse gases emissions. [NHTSA-2009-0059-0086.1, p.5]

Because the Clean Air Act is such a poor vehicle for addressing climate change, we believe that further federal legislation is the best approach to reduce emissions that may contribute to global

warming. We recognize that the Supreme Court's decision in Massachusetts v. EPA may require the Agency to commence regulatory action in absence of, or in the face of delayed, Congressional action. Congress, however, is poised to act. Comprehensive climate change and energy legislation has been passed by the U.S. House of Representatives, H.R. 2454 - the American Clean Energy and Security Act of 2009 (Waxman-Markey), and the Senate is considering stand alone climate change legislation, the "Clean Energy Jobs and American Power Act" (Kerry-Boxer), and energy legislation, S. 1462 - the American Clean Energy Leadership Act of 2009 (ACELA). The NCC urges EPA and the Administration to work in support of prompt Congressional efforts, and exercise its authority only where it can adopt flexible, appropriate measures to control greenhouse gases in a manner best designed to facilitate ultimate Congressional action. [NHTSA-2009-0059-0086.1, pp.5-6]

The National Climate Coalition appreciates the opportunity to submit these comments and looks forward to providing further input. We encourage EPA to work with Congress towards prompt national greenhouse gas legislation. If EPA must continue to move ahead with rulemakings under the Clean Air Act, then we urge the Agency to exercise its discretion to limit application of those sections of the statute that would impose unintended economic harm and divert scarce public and private resources without commensurate benefit in stabilizing global greenhouse gas concentrations. As appropriate, in the course of regulating greenhouse gases under the statute, EPA also should seek prompt Congressional confirmation that such harmful provisions may be so limited or need not be implemented to address climate change. [NHTSA-2009-0059-0086.1, p.8]

Process Engineers

With the confirmation of scientific fraud of AGW manifested world-wide, any and all proposed regulations need to be suspended until after Congressional Inquiry is completed by Senator Inholf's committee. [OAR-2009-0472-7166, p.1]

Shaw, Donald F.

I oppose the implementation of the proposed requirements. I request that you consider these comments and drop the proposed requirements. [OAR-2009-0472-7270, p. 1]

I oppose the Environmental Protection Agency (EPA) proposal to regulate carbon dioxide emissions from vehicles. These regulations will significantly increase the cost of our cars, harm our economy, and limit our transportation options. Significant hardships will be imposed on every family. We need efficient, affordable transportation to rebuild our economy and create American jobs. [OAR-2009-0472-7270.1, p. 1]

The $1100/car is prohibitive and will probably exceed that estimate. [OAR-2009-0472-7270.1, p. 2]

According to the proposed regulations, EPA wants to regulate carbon dioxide emissions from cars and trucks, "because of the critical need to address global climate change." (74 Fed. Reg. 49454).This regulation does not achieve EPA's stated goal because, according to EPA data, it

does not reduce global warming or sea level rise in a meaningful way. The regulation states that the carbon dioxide reductions "are projected to reduce global mean temperature by approximately 0.007–0.016°C by 2100, and global mean sea level rise is projected to be reduced by approximately 0.06–0.15 cm by 2100." [OAR-2009-0472-7270.1, p. 2]

The EPA is proposing to increase the price of automobiles by $1,100 per car (74 Fed. Reg. 49460) in exchange for (according to EPA) a global temperature decrease of 16 thousandths of a degree Celsius in 90 years. Also, according to EPA, sea level won't rise by an extra 1.5 millimeters. These tiny amounts (assuming they will be realized) are so inconsequential that they will not affect global climate at all nor will they affect "public health and welfare" (See Clean Air Act Sec. 202). [OAR-2009-0472-7270.1, p. 2]

EPA should not regulate carbon dioxide or greenhouse gas emissions under the Clean Air Act. These regulations will make our high unemployment even worse. It does not make sense for EPA to reduce American jobs, increase the price of cars and trucks, and make America less economically competitive in exchange for an immeasurable and meaningless reduction in global temperature.

I appreciate the opportunity to comment on the proposed rule making and recognize that many past efforts by the EPA have been beneficial to improve our environment. This proposal will have no beneficial impact while having destructive impact on our economy. [OAR-2009-0472-7270.1, p. 3]

Spurgeon, C. M.

The Environmental Protection Agency (EPA) is not justified in regulating carbon dioxide emissions from vehicles. These regulations will only increase the cost of our cars, harm our economy, and limit our transportation options. We need efficient, affordable transportation to rebuild our economy and create American jobs. [OAR-2009-0472-7092.1, p. 1]

According to the proposed regulations, EPA wants to regulate carbon dioxide emissions from cars and trucks, "because of the critical need to address global climate change." (74 Fed. Reg. 49454).This regulation does not achieve EPA's stated goal because, according to EPA data, it does not reduce global warming or sea level rise in a meaningful way. The regulation states that the carbon dioxide reductions "are projected to reduce global mean temperature by approximately 0.007–0.016°C by 2100, and global mean sea level rise is projected to be reduced by approximately 0.06–0.15 cm by 2100." [OAR-2009-0472-7092.1, p. 1]

EPA should not regulate carbon dioxide or greenhouse gas emissions under the Clean Air Act. These regulations will make our high unemployment even worse. It does not make sense for EPA to reduce American jobs, increase the price of cars and trucks, and make America less economically competitive in exchange for an immeasurable and meaningless reduction in global temperature. [OAR-2009-0472-7092.1, p. 2]

Texas Industry Project (TIP)

Global climate change is a serious issue that is best addressed through concerted international action and/or comprehensive federal legislation, rather than through unilateral agency regulation under the current Clean Air Act ("CAA" or the "Act"). Not only did the Supreme Court make clear in Massachusetts v. EPA that the U.S. Environmental Protection Agency ("EPA" or the "Agency") has substantial discretion regarding the timing of any rules, but the Court of Appeals for the District of Columbia ("D.C. Circuit") subsequently denied a petition to compel EPA action in response to Massachusetts v. EPA. [OAR-2009-0472-7430.1, p. 1]

More importantly, Congress is moving forward quickly on comprehensive legislation that would address the problem of climate change outside of the structure of the current Act. Despite a clear need to proceed with the utmost caution in this important area, EPA has proposed to regulate GHG emissions from motor vehicles in the Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards (the "Motor Vehicle GHG Rule"). Under EPA's current interpretation of the CAA, the Motor Vehicle GHG Rule may (as EPA has stated in the Proposed PSD and Title V GHG Tailoring Rule (the "PSD Tailoring Rule") trigger regulation of GHG emissions from millions of stationary sources, including hundreds of thousands of Texas sources, many of which have never before been regulated under the Clean Air Act ("CAA"). [OAR-2009-0472-7430.1, p. 1]

The Motor Vehicle GHG Rule, as well as its companion, the PSD Tailoring Rule, are fundamentally flawed, both procedurally and substantively, and Texas, as the nation's leading energy producer and a leader in chemical manufacturing and agriculture, could be significantly impacted by these federal rulemakings. Most notably, EPA completely failed to evaluate the burdens of triggering PSD and Title V for GHG emissions under the required federal regulatory review statutes and Executive Orders. Furthermore, even had the Agency conducted the required burden analysis, the rule is unlawful, would devastate the Texas and national economies, and the burdens of regulating GHGs under CAA Section 202 far outweigh the insignificant environmental benefits of the GHG emission standards. [OAR-2009-0472-7430.1, pp. 1-2]

Accordingly, for all of the reasons discussed in these comments, EPA should withdraw the Motor Vehicle GHG Rule, and proceed with caution going forward by allowing both the international community and Congress time to develop a comprehensive and sensible approach to the global problem of climate change. [OAR-2009-0472-7430.1, p. 2] [See OAR-2009-0472-7430.1, pp. 2-11 for specific comments related to PSD and NSR for stationary sources in Texas.]

EPA Response:

EPA received several comments opposing the proposed rule, some opposing the overall program and other opposing various specific aspects of the rule. These comments are addressed generally here, and in detail in the respective sections of this Response to Comments document and elsewhere in the rulemaking documents.

Commenters opposing the overall program raised issues of EPA's statutory authority, comments related to the EPA's separate action on "endangerment," and the relationship commenters see between this action and the permitting of stationary sources of GHGs. (See Section 7.1 of this document and the preamble for our discussion of permitting issues.) Many of these comments

request that EPA forego action until such a time when Congress enacts comprehensive climate and energy legislation. Some commenters support a national program that would involve new NHTSA CAFE standards but not EPA GHG standards. Some commenters also express concerns about whether the projected climate benefits of the program are as important and as large as EPA projects, and are concerned about recent attention to international climate science. Some commenters (although none from the auto industry) believe that the economic impacts of the program on the industry and consumers are too high; some of these commenters believe there will be impacts on vehicle performance and vehicle choice.

EPA has extensively evaluated each of these concerns about the program, and, as stated above, address them elsewhere in this document and the rule. We have made some relatively minor but important improvements to the proposed program in response to comments; our overall conclusions in the NPRM remain the same:

- That the rule represents very important public policy that the Clean Air requires EPA to take action on,
- That our action is fully authorized by and meets all requirements of the Clean Air Act,
- That our overall assessments of the costs and benefits of program are well documented and sound, and
- That increased vehicle costs will be offset by fuel savings, and vehicle choice and performance will not be negatively affected.

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2. Reserved

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3.0 EPA CO2 Standards

Several commenters provided comments which touch upon two or more aspects of the proposed EPA GHG standards, as they are broken out in this Section of the RTC document. Splitting these comments apart according to the organization of this section might have caused a loss of the context of the specific comment. Citing the entire comment in each relevant subsection would have produced significant duplication. In lieu of either of these approaches, we present these integrated comments at a relatively high point in the organization of this section (e.g., Section 3.0) where all of the relevant specific aspects of the comment are addressed either at that level or at a more disaggregated level (e.g., Section 3.1).

Organization: Ford Motor Company
National Automobile Dealers Association (NADA)
New York State Department of Environmental Conservation
University of Miami, School of Law
Dr. Walter McManus, Ph.D., of the University of Michigan
Transportation Research Institute (UMTRI)
Transportation and Buildings Policy for the State of Massachusetts
Executive Office of Energy and Environmental Affairs

Comment:

Ford Motor Company

Ford supported the President's initiative to bring together key stakeholders and work out a solution to enable a single national program for motor vehicle greenhouse gas and fuel economy standards. A state-by-state approach to such standards is unworkable for a variety of reasons, and would impose hardships on consumers, dealers, and manufacturers. [OAR-2009-0472-7082.1, p.1]

[Ford also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6815, pp. 16.]

[Ford also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 32.]

National Automobile Dealers Association (NADA)

Above all else, the final rule must encompass a single national light-duty vehicle fuel economy/GHG program that avoids any unworkable patchwork of state laws. The EISA mandate for a fleet-wide combined fuel economy average of at least 35 miles per gallon (a 40% increase) by 2020, with a commensurate reduction in GHGs of at least 30 percent, was Congress' clear guidance on what a National Program should achieve. Notably, EISA's ambitious Congressional mandate resulted from vigorous public debate and, in the end, received virtually universal support from all interested parties. Unfortunately, the

proposed National Program downplays EISA's landmark mandates, opting instead for a bureaucratic cobbling of new NHTSA CAFE standards together with separate and largely redundant EPA GHG standards. [OAR-2009-0472-7182.1, p.3]

As the National Program proposal states, "CAFE standards address most, but not all, of the real world C02 emissions because EPCA requires the use of 1975 passenger car test procedures under which vehicle air conditioners are not turned on during fuel economy testing." 74 Fed. Reg. 49458. EPA's test procedures used to calculate CAFE standards are based on equations involving a carbon balance technique where fuel economy is calculated from the measurement of exhaust emissions and an assumption that the quantity of carbon in a vehicle's exhaust gas is equal to the quantity of carbon consumed by the engine as fuel. The physics and chemistry involved spell a direct relationship; controlling fuel economy controls GHGs and controlling GHGs controls fuel economy. Clearly, the most straightforward and elegant National Program would be one with NHTSA regulating tailpipe GHGs through its long-established, Congressionally-mandated CAFE standards, supplemented by a few appropriately tailored EPA rules governing vehicle air conditioning (under Title VI of the CAA), fuel design, and vehicle use. Several of the comments below point to areas where EPA's tortured attempt to overlay GHG rules on top of NHTSA's CAFE standards raise significant issues of concern. [OAR-2009-0472-7182.1, p.3]

In any event, NADA strongly objects to the proposal's admitted attempt to incorporate the fuel economy/GHG rules promulgated by California's unelected Air Resources Board (CARB). CARB's long history of appropriately addressing mobile source criteria and hazardous pollutants, in no way justifies incorporation of its GHG rules as they are neither practically necessary to nor legally appropriate for a well-designed National Program. It is in this light that NADA recently challenged EPA's reversal of its prior denial of CARB's request for authority to regulate motor vehicle fuel economy and GHGs. NADA 's legal challenge has nothing to do with the propriety of raising fuel economy standards, but rather arises from the unworkable impact on dealership new vehicle commerce that would result from a "patchwork of state—based regulations. Notably, nothing in EISA changed EPCA's explicit preemption of the adoption or enforcement of laws "related to" fuel economy by states, an express preemption necessary to ensure national uniformity and to avoid a patchwork of state-by-state mandates. CARBs "flat standard" approach to regulating motor vehicle fuel economy and GHGs clearly fails to account for all relevant criteria necessary to a National Program, directly relates to and conflicts with the federal CAFE standards, and unquestionably undermines the safety. job loss, equity. and consumer choice considerations mandated by EPCA. [OAR-2009-0472-7182.1, p.3]

The National Program very ambitiously proposes to pull forward EISA's 2020 target by four years. Recently, a top EPA official stated that EPA and NHTSA have "put together a single national standard with one implementation." Cobbled together and christened the "National Program," the proposal in reality is not a "single national standard," but three fuel economy standards separately administered by NHTSA, EPA and CARB. The proposal claims that the National Program will be "harmonized" and "consistent, " yet it

is virtually impossible for the CAFE program, the CAA, and CARB's regulations (designed to regulate GHGs only from light duty vehicles produced for sale in California) to be so as each agency must follow separate statutory frameworks. The National Program is in fact three different fuel economy standards, set by three different agencies, governed by three different laws. [OAR-2009-0472-7182.1, p.5]

Automakers producing light-duty vehicles for sale in MYs 2012-2016 will have to comply with all three standards, even when their mandates and policies conflict. This makes for an unnecessarily complex and costly regulatory program with scant (if any) commensurate additional benefits. While the proposal gives lip service to harmonizing these three mandates, in reality it falls far short in that regard. For example, it fails to adequately rationalize and equalize GHG tailpipe emissions between the NHTSA and EPA standards. Perhaps one solution to this specific issue would be for NHTSA to adjust its curves downward to better reflect the contribution A/C improvements will make to overall GHG reductions. [OAR-2009-0472-7182.1, pp.5-6]

Curiously, the proposal fails to establish a "ratable" ramp-up of fuel economy targets. The worst example of this is the unjustifiably large jump between MYs 2011 and 2012. Put simply, the proposal's standards require too much, too soon. Given the unprecedented targets proposed for MY 2016, the National Program should adopt a more equitable and linear rate of annual increase for MYs 2011-2016, and even should consider back loading higher increases into the later model years. NADA does not suggest what targets are feasible or practicable for any given model year, as such determinations depend on an appropriate evaluation of vast amounts of often confidential business data viewed in the light of statutory criteria and numerous assumptions. Of course, an ongoing evaluation of manufacturer product plan information is essential, as exemplified by NHTSA's recent request for future data. The feasibility and practicability of compliance changes with time for many reasons, not the least of which is the ability of economically constrained vehicle manufacturers to develop and implement new technologies, and the willingness of the motoring public to pay for those new technologies if and when they choose to buy or lease a new vehicle. [OAR-2009-0472-7182.1, p.6]

Ultimately, any National Program cannot impose standards beyond those deemed to be "maximum feasible." "Economic practicality" is one key criterion for making that statutory determination, and any analysis of such must recognize, preserve, and capitalize on consumer choice and affordability. Again, unless and until vehicles covered by CAFE standards are actually purchased, projected fuel economy and GHG reduction benefits will be illusory. Moreover, all three standards must take into account impacts on new passenger car and light truck dealerships. Dealerships directly purchase the vehicles produced by manufacturers. If the National Program mandates vehicles that are unacceptable to the motoring public for cost or performance reasons, potential new vehicle customers predictably will hold on to their existing vehicles longer or will turn to the used vehicle marketplace. The result: unwanted new vehicles languishing on dealership lots, with a decline in dealership sales, income, profits, and employment, and a predictable rise in business failures. [OAR-2009-0472-7182.1, p.6]

[National Automobile Dealers Association also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 80-84, 88-89.]

New York State Department of Environmental Conservation

New York will deem vehicles that comply with the new federal standards to be in compliance with its adopted state standards from 2012 through 2016. We wish to emphasize that the Clean Air Act provision of states' rights to adopt motor vehicle standards - for California under Section 209 and for other states under Section 177 - was crucial in allowing New York and other states to lay the groundwork and create the momentum for this national vehicle GHG emissions reduction program, as it was for many other previous ground-breaking mobile source regulatory programs. Therefore, our statutory right to adopt more rigorous motor vehicle standards than the federal government's proved to be a valuable catalyst for innovation and progress. [OAR-2009-0472-7454, cover page 2] [New York State Department of Environmental Conservation also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 13-16]

The New York State Department of Environmental Conservation (Department) agrees with EPA's stated goal of increasing the stringency of greenhouse gas emissions standards at a rate such that manufacturers can comply by making emissions reductions as part of regularly scheduled vehicle redesigns. We believe that the proposed standards are reasonably achievable, and are phased in at an appropriate pace. [OAR-2009-0472-7454, p.1]

University of Miami, School of Law

The time frame of the proposed rule nevertheless poses some concern. The standards should not cease to apply in 2016, but should remain in effect until a comparable or more stringent standard is permanently in place. Before drafting the rule, the EPA should make sure to explore other related transportation-emitters that could be regulated as part of this effort. In this way, the standards can be applied to more than 60% of emissions from transportation. [OAR-2009-0472-6770, p. 1]

Dr. Walter McManus, Ph.D., Research Scientist, University of Michigan Transportation Research Institute (UMTRI)

EPA and NHTSA have proposed a new methodology for analyzing potential CAFE and GHG emissions standards that is more transparent, replicable, and accurate that the prior methodology. [OAR-2009-0472-3651.1, p.3]

Among other objectives, Congress wants fuel economy standards that balance the benefits from reducing negative external effects of fuel consumption with the costs of improving vehicle fuel economy. The benefits can generally be estimated with public data, but to estimate the costs it would be helpful to use private information on costs

known only to the automakers. This information asymmetry has the potential to introduce "gaming" into the process. [OAR-2009-0472-3651.1, p.3]

[[Dr. McManus, also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 36-37.]

Transportation and Buildings Policy for the State of Massachusetts Executive Office of Energy and Environmental Affairs

As a result of the differences in the EPA and NHTSA statutes, there are two key areas that I would like to highlight. First, in the proposed rulemakings, the GHG benefits estimated from the EPA-proposed, footprint-based standard, expressed as grams per mile or CO2 are slightly higher than what NHTSA's proposing for CAFE. This is primarily because the CAFE standards do [EPA-HQ-OAR-2009-0472-4621, p.24] not account for greenhouse gas emissions from vehicle air conditioning systems. In contrast, EPA gives the automobile manufacturers the ability to obtain credit for reducing CO2 and hydrofluorocarbon emissions from air conditioning systems. We believe EPA's approach is correct; requiring additional reductions from air conditioning systems represents, quote, a whole vehicle approach which is appropriate. [EPA-HQ-OAR-2009-0472-4621, p.25]

EPA Response:

As indicated by the organization of Section 3, there are many important aspects of the EPA GHG standards for motor vehicles. We have attempted to separate the comments received according to their primary focus and address each group of similar or comparable comments together in a cohesive manner. The comments cited above in Section 3.0 interweave many of these aspects in a way that was not easily separable. Rather than repeating these comments in two or more of the following sub-sections of Section 3.0, we present these comments here together. The issues which they raise, including the interaction between state and federal programs, the overlap of the NHTSA and EPA standards, the overall stringency of the NHTSA and EPA standards, the stringency of the 2012-2016 standards (including the issue of EISA's direction to NHTSA for a ratable increase in the standards through 2020) and the desirability of carrying the current approach to standard setting forward beyond the 2016 model year will be addressed as each of these issues is focused on more specifically in the various sub-sections of Section 3.0 of this RTC document.

3.1 National versus state standards and harmonization of EPA and NHTSA standards

Organization: Center for Biological Diversity
Environmental Defense Fund
Alliance of Automobile Manufacturers (Alliance)
New York University School of Law, Institute for Policy Integrity (IPI)
Volkswagen Group of America (Volkswagen)

BMW of North America, LLC (BMW)
National Association of Manufacturers (NAM)
Senator Fran Pavley, California State Senate
Consumer Federation of America
University of California, Los Angeles School of Law
State of New Jersey
State of Washington Department of Ecology
Environment New Jersey

Comment:

Center for Biological Diversity

C. The Effect of Other Motor Vehicle Standards on Fuel Economy Supports More Stringent Standards

California has consistently led the way in seeking to set higher mileage standards, and is a leader in the regulation of GHG emissions. Undoubtedly, this trend will continue. Thus, the ability of California to seek additional waivers in the future to continue in this leadership role argues for the setting of more stringent national standards as well. [OAR-2009-0472-7265.1, p. 19]

Alliance of Automobile Manufacturers (Alliance)

In addition, the Alliance supports creation of an effective single, national program that automakers can plan to meet and that will minimize the disruptions of multiple programs on vehicle choice and availability. The Administration fundamentally has accomplished this objective for the 2012-2016 timeframe. Beyond 2016, this goal must still be pursued. It is important that all key stakeholders, including California and states adopting California standards, be included in this process. It is also critical that the Federal government continue working to develop an integrated approach that addresses infrastructure, vehicles, fuels and fuel quality, and consumer behavior, as well as all other sectors of the economy. [OAR-2009-0472-6952.1, pp.1-2]

Harmonization of EPA and NHTSA S-Curves

Harmonization between the EPA and NHTSA programs is critical to meeting the National Program's target of 250g CO2/mile by MY 2016. Both agencies stress the importance of harmonization in the May 22, 2009 Notice of Intent, where the word harmonization is mentioned nine times. The Notice of Intent describes key elements of the National Program as follows:

EPA and NHTSA intend to propose two separate sets of standards, each under their respective statutory authorities. EPA expects to propose a national CO2 vehicle emissions standard ….NHTSA expects to propose appropriate related CAFE standards. [OAR-2009-0472-6952.1, p.31]

EPA standards recognize the CO2 benefit from investing in air conditioning technology improvements, whereas NHTSA's standards are constrained from doing so. Since the agencies are taking different approaches to reaching the same 2016 goals, the National Agreement states that a manufacturer should be able to build a single national fleet of light-duty vehicles that simultaneously satisfy the requirements of both programs. For a single product plan to meet both the EPA and NHTSA approaches, the stringency of the tailpipe CO2 standards must be equivalent between the two programs. However, the stringencies of the tailpipe standards are not equivalent in the proposed rule. A primary reason for this lack of equivalency is the air conditioning assumptions being made in the translation between the NHTSA and EPA standard curves. [OAR-2009-0472-6952.1, pp.31-32]

Manufacturers that employ a higher level of A/C system advancements will not realize the benefit under the NHTSA CAFE program. If the NHTSA curves fail to recognize the A/C system improvements a manufacturer may make under the EPA framework, the curves could have the unintended consequence of discouraging A/C system improvements. This disconnect, effectively leads to a more stringent overall National Program than is contemplated by the Notice of Intent. [OAR-2009-0472-6952.1, pp.33-34]

As an example, one manufacturer may want to implement alternative refrigerants as quickly as possible. EPA recognizes the benefits of low GWP refrigerants and rewards this with 14.9 g/mi credit. If the manufacturer's strategy was to do this on half of its vehicle fleet in MY 2012, the manufacturer would earn 14.9 g/mi CO2e divided by two, or 7.5 g/mi CO2e credits for the refrigerant portion alone (plus other indirect credits). This is more than twice the average credit level assumed. A strategy like this may be the most technologically feasible way to overcome the steep near term increase in the MY 2011-2012 standards, while the manufacturer is implementing the longer lead time fuel efficiency strategies. [OAR-2009-0472-6952.1, p.34]

This same manufacturer may determine that the best and most economically practicable way (given the capital constraints currently faced by the industry) for complying with this rule is to maximize A/C improvements in combination with fuel economy improvements. The current NHTSA S-curve translation would penalize this approach even though equivalent GHG reductions would be achieved. [OAR-2009-0472-6952.1, p.34]

The issue here has to do with harmonizing the two rules – a key objective of a successful National Program. Manufacturers still have to meet the overall stringency of the joint program. [OAR-2009-0472-6952.1, p.34]

Recommendation

NHTSA needs to adjust the S-curves downward for 2012-16 model years to allow for the potential strategy of pursuing maximum A/C improvements to lower GHG emissions. The Alliance's proposed adjustments can be accomplished without backsliding from the

MY 2011-15 fuel economy standards published in the April 2008 NHTSA NPRM (and later withdrawn). 73 Fed. Reg. 24,352 (May 2, 2008). [OAR-2009-0472-6952.1, p.34]

The table below quantifies the difference in CO2e between the April 2008 NPRM and the September 2009 NPRM. The difference in CO2e quantity (shown in column E) could be used without backsliding from the April 2008 NPRM. NHTSA should re-translate the EPA S-Curves by the amount in Column G. There would be no environmental loss with such an approach because a manufacturer that does not pursue maximum air conditioning credits would be required to achieve the necessary CO2 reductions through tailpipe emissions. [OAR-2009-0472-6952.1, p.34]

Consideration of EPA's 2012-2016 Model Year GHG Standards

With respect to EPA's 2012-2016 GHG standards, it is important to note that the current joint NPRM is the result of an agreement in principle between the federal government, California, and the automakers in support of one national program for GHG and fuel economy standards for model years 2012-2016. Under the agreement in principle, EPA and NHTSA are working together to ensure that their respective standards are harmonized as closely as possible, in keeping with the joint rulemaking notice. Obviously, the harmonization effort requires both agencies to be aware of and 'consider' what the other is doing, so they can make adjustments that align the requirements of both the GHG and fuel economy programs. As evidenced by the NPRM, NHTSA and EPA have been engaged in the harmonization effort for some time now, and they should continue in that effort to the conclusion of the joint rulemaking process. This will fulfill NHTSA's obligation to 'consider' EPA's GHG rules under Section 32902(f). Of course, the process of 'considering' and harmonizing with EPA's GHG rules does not eliminate NHTSA's obligation to set standards that conform to the other criteria set forth in EPCA. For example, NHTSA must see to it that nothing resulting from the harmonization effort, or any other aspect of the standard-setting process, will result in fuel economy standards that are not technologically feasible or economically practicable. NHTSA has an independent obligation under EPCA to make sure that those criteria are satisfied under any final rule. Likewise, any regulations adopted by EPA under the Clean Air Act for model years beyond the scope of the current proposal must be consistent with the goals and purposes of EPCA and must respect NHTSA's primary role in setting fuel economy standards in consultation with EPA and other agencies. [OAR-2009-0472-6952.1, p.66]

Consideration of California's 2012-2016 Model Year GHG Standards

Under the agreement in principle mentioned above, the California Air Resources Board is expected to promulgate amendments to its regulations providing that compliance with the federal GHG/fuel economy program is deemed to satisfy compliance with the California program. Under this framework, as the Alliance understands it, the California GHG standards will have no independent practical impact on fleet-wide fuel economy in the 2012-2016 time frame. Assuming that the agreement in principle is carried out as anticipated, the existence of California GHG regulations for the 2012-2016 model years

should therefore not have any impact on NHTSA's standard-setting process. [OAR-2009-0472-6952.1, p.66]

Consideration of EPA or CARB GHG Standards for the 2017 Model Year and Beyond

The Alliance and all stakeholders have agreed that the best approach to control mobile source GHG emissions is through a national program. The Alliance supports the concept of a national program beyond the 2016 model year and urges all other stakeholders to do likewise. The Alliance is confident a national approach can and will be achieved for the post-MY 2016 time frame, and we will work diligently towards that goal. Assuming the 'one national program' approach continues beyond 2016, and the standard-setting process for 2017 and beyond is conducted under a joint rulemaking much like the current one, NHTSA's obligation to consider EPA's GHG rules under Section 32902(f) would be similar to what is outlined above for the 2012-2016 time period. [OAR-2009-0472-6952.1, pp.66-67]

New York University School of Law, Institute for Policy Integrity (IPI)

(3) Program Choice

The program proposed by EPA builds largely on the structure of its previous regulatory programs, taking the form of traditional command-and-control regulation. [OAR-2009-0472-7232.3, p. 14]

EPA has submitted its positive endangerment finding on greenhouse gas pollutants under Section 202 of the Clean Air Act (CAA) to the White House Office of Management and Budget for final approval. Once that finding is finalized, the CAA requires EPA to promulgate regulations. As explained in IPI's report, The Road Ahead, the statutory language in Title II of the CAA limits EPA in its choices to regulate under this section; regulations must be in the form of emissions standards mandating some type of limit on GHG emissions. These types of command-and-control regulations will be detrimental to any subsequent cap-and-trade system that covers GHG emissions from vehicle fuel, whether created by Congress or by EPA. [OAR-2009-0472-7232.3, pp. 14-15]

Assuming California's existing standards for motor vehicle emissions are close to efficient, EPA's attempt to harmonize its proposed GHG standards with Californian policy is the optimal regulatory choice. This harmonization will minimize any inefficient interaction of the standards with a subsequently enacted cap-and-trade system, by creating a single uniform regulatory regime. Through this method, EPA avoids increasing regulatory obligations on (or creating regulatory uncertainty for) car manufacturers, as manufacturers already need to comply with similar regulations for cars sold in California and the seventeen other states that have adopted California's standards. [OAR-2009-0472-7232.3, p. 15]

Although the proposed GHG regulations fulfill EPA's legal duty under Section 202, the program does not reach an efficient level of GHG reductions in the transportation sector.

The proposal does not create a uniform regulatory framework applicable to all mobile sources and does not effectively maximize social welfare or minimize costs. In April 2009, IPI submitted a rulemaking petition to EPA requesting the creation of a comprehensive cap-and-trade system under Section 211 of the CAA for vehicle fuel used in all mobile sources. A cap-and-trade rulemaking would be more effective at addressing GHG emissions of all mobile sources, including sources such as off-road vehicles and marine vessels, which are not subject to a similar statutory scheme as light-duty vehicles. It would also allow EPA to regulate emissions at the source of fuel sale, manufacture, and import rather than requiring piecemeal command-and-control regulation of various vehicle sectors. The outlines of such a program, and the statutory authority for the program under the CAA, are more clearly outlined in IPI's petition and IPI's report The Road Ahead, included as attachments to these comments. [OAR-2009-0472-7232.3, p. 15]

Volkswagen Group of America (Volkswagen)

Volkswagen has concern that the relative stringency between the EPA GHG proposed regulation and the NHTSA CAFE: regulation is not equivalent. It is our understanding that the EPA regulation would be more stringent than the NHTSA regulation due to the credit flexibility offered under the EPA GHG proposal. The preamble speaks at length about the need for harmonization and the effort spent to harmonize the NHTSA CAFE program and the EPA GHG requirements under a National program. We expected the stringency published for the EPA GHG as the 250 gram/mile combined car and truck fleet target as outlined by the President's announcement on May 19, 2009 was a given value that the collective automotive companies and other stakeholders could agree to. In the joint NPRM, however, we were surprised to see the stringency of the NHTSA curves when they are converted to a CO2 basis. The NHTSA curves match the stringency of the EPA targets, especially in the earlier years of the regulation. In particular, the 2012 MY curves are essentially the same when the NHTSA curve is converted to a CO2 basis. This is troubling because we do not believe this increased stringency of the NHTSA targets allows manufacturers complete confidence they can build a single fleet that complies with both regulations. During negotiations earlier this year leading up to the announcement of the National agreement it was thought that if a manufacturer complied with the EPA GHG regulation that in turn meant that the manufacturer also complied with the NHTSA CAFE regulation. Based on the current CAFE targets published in the NPRM we see the possibility that manufacturers can achieve the EPA targets but not the NHTSA targets, leading to the situation where a manufacturer could comply with the EPA regulation but still pay a CAFE penalty. We ask the agencies to examine this possibility and adjust the NHTSA targets to allow the regulations to be better harmonized. As discussed in the Alliance comments, we agree that this issue is due to the air conditioning credit NHTSA is assuming as they establish their curves. We recommend that the offset between the EPA and NHTSA curves should be constant and should be based on the maximum A/C credit that can be realized under the CO2 compliance requirements. This provides incentive to reduce GHG emissions through the use of improved A/C system. As is mentioned several times in the regulation, the goal is to set the relative levels of the standard to, 'represent a harmonized approach that will

allow industry to build a single national fleet that will satisfy both the GHG requirement under the CAA and CAFE requirements under EPCAIEISA' (Federal Register, Monday, September 28, 2009, page 49468, Section 2, Level of the Standards). [OAR-2009-0472-7210.1, pp.4-5]

CO2 uses a sales-weighted fleet average calculation. CAFE uses a harmonic sales-weighted fleet average calculation. We only note that a consistent calculation method between the two regulations may be preferred. If changes are made to harmonize the calculation method, however, the relative stringency of the regulations must be maintained. [OAR-2009-0472-7210.1, p.9]

BMW of North America, LLC (BMW)

[These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 136.]

We also would like to mention 25 that we very much appreciate the collaboration of the State of California in helping to make this National Program a reality. The greenhouse reduction targets of California have been met with a single national standard. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 137.]]

National Association of Manufacturers (NAM)

NAM supports the Administration's broader policy objectives of harmonizing vehicle emission standards under a National Program and promotion of energy efficiency through enhanced CAFE standards through the Department of Transportation (DOT). Not only does establishment of national, uniform standards have the potential - if implemented correctly- to create a climate of investment certainty necessary to make long-term business decisions, but stronger energy efficiency objectives will also enhance domestic energy security, which is a key policy priority for manufacturers. The NAM applauds the Administration's objective to mitigate the additional costs that manufacturers would otherwise face in having to comply with multiple sets of federal and state standards. [OAR-2009-0472-7215.1, p.1]

The NAM supports the Administration's goal to harmonize fuel efficiency standards by implementing a federal rule that will pre-empt disparate state and regional programs. However, manufacturers believe that the process established by EPA, by using the Clean Air Act as its primary statutory vehicle, is deeply flawed and will have the unintended and unmanageable consequence of triggering regulation of millions of stationary sources. By resorting to the CAA, the EPA has established a process that will undermine private and public efforts to recover from the deepest economic downturn since the 1930s. Alternatively, the EPA should promulgate a rule that adequately decouples the goal of achieving greater fuel efficiency and reduced light-duty vehicle GHG emissions from the consequence of regulating GHG emissions from millions of stationary facilities. Any

failure to do so will inflict harm on the manufacturing sector for which the NAM must seek appropriate remedies, legislative or otherwise. [OAR-2009-0472-7215.1, p.5]

Senator Fran Pavley, California State Senate

One of the cornerstones of the agreement underpinning these proposed regulations is that it strongly reiterates California's authority under the Clean Air Act to set its own greenhouse gas standards as part of the national program, and California will continue to be able to set new standards once the program expires in 2016. It is absolutely essential that any ruling to extend the federal program beyond 2016 does not either consciously or inadvertently create de-facto preemption for California and other states to move forward with their own programs, including further regulations for automobiles and trucks. State actions not only enable and accelerate progress toward emissions reduction goals, but also help spur technological innovation that will benefit the entire country. This is absolutely crucial because of California's special challenges to meet air quality standards to protect our citizens' health and safety. [OAR-2009-0472-7275.1, p.4]

[Senator Fran Pavley also submitted these comments as testimony at the Los Angeles public hearing. See docket LA EPA Hearing EPA-HQ-OAR-2009-0472-7283, pp. 13-20]

Consumer Federation of America

From a policy perspective, it is critically important that the Clean Air Act's framing of standard setting, which allows EPA to take a long-term view and a technology-forcing role, is being joined to the NHTSA approach. It must shake the standard setting process out of its lethargy. The decision to join NHTSA and EPA creates the opportunity for a major improvement in the regulation of automobiles because the Clean Air Act allows EPA to take a longer-term view with greater flexibility. Moreover, the lengthy discussion of the failure of the market to yield an efficient outcome with respect to energy efficiency presented in Section II has two critical purposes in these comments and the process of standard setting for both fuel economy and tailpipe emissions.

First, the explanation of why the vehicle fleet is less efficient than it should be is critical to understanding why fuel economy standards are the right policy to address the problem and how those standards should be set. The explanation of the "efficiency gap" (the gap between the optimal level of efficiency and the level the marketplace yields) involves a host of market imperfections, barriers and obstacles on both the supply and the demand side. Our analysis shows that setting fuel economy standards is an ideal approach to addressing the market imperfections, barriers, flaws and obstacles that underlie the market failure.

Second, and more importantly, the law and practice of setting fuel economy standards at NHTSA under the Energy Policy Conservation Act have severely restricted the ability of the agency to set fuel economy standards in the public interest (see Exhibit II-13). Standards are the right policy instrument, and EPA is the right agency to take the lead for a variety of reasons

First, NHTSA is required to achieve only a 35-mile per gallon standard by 2020, but beyond that there is no mandate to achieve higher levels of fuel economy. In contrast, as a result of a recent Supreme Court ruling, EPA is obligated under the Clean Air Act (CAA) to regulate tailpipe emissions of pollutants, such as carbon dioxide.

Second, NHTSA is severely constrained in the time frame for which it can set standards. It must give the automakers at least 18 months advance notice of what the standard will be and it cannot set standards more than 5 years in advance. This narrow window for standard setting is too short for effective long term planning. The rulemaking period barely covers a full product design cycle. NHTSA has repeatedly said that the time frame is too short to ask the industry to do too much. The short time horizon shortchanges the public. EPA is not under this time constraint. Therefore, it can give the industry a long-term trajectory that promotes energy efficiency and environmental clean-up. In other words, NHTSA has neither the legal mandate nor the ability to take a long-term view of fuel economy, but EPA has the ability to do so for tailpipe emissions. [OAR-2009-0472-7272.1, pp.35-36]

University of California, Los Angeles School of Law

As you work to finalize the proposed federal greenhouse gas emissions standards referenced above, I write to urge you to resist any efforts restricting the right of California, after 2016 and under the Clean Air Act, to regulate automobile emissions more strictly than the federal government. [OAR-2009-0472-7263.1, p. 1]

For over 40 years, California has had the authority to set stricter standards than the federal government for automobile emissions under the Clean Air Act. For thirty years, other states have been permitted to adopt those tougher standards. The program has worked exceedingly well, with California's regulations often serving (as here) as a model for other states and even for national programs by showing what is possible. [OAR-2009-0472-7263.1, p. 1]

The tradition of state innovation benefits the country as a whole. When the Clean Air Act was passed, California had already begun, by necessity, to regulate motor vehicle emissions in significant ways. Congress wisely allowed California's program to remain and allowed other states to adopt California's regulatory program. Over time, California has shown an ability and willingness to regulate creatively in the public interest in ways that often lead to innovative solutions. This very federal rulemaking would not have been possible without the leadership of the states, and it should not be used as a means to restrict states' abilities to continue to serve as leaders in the future. [OAR-2009-0472-7263.1, pp. 1-2]

Indeed, the national agreement paving the way for these regulations, signed onto by car manufacturers, states, and federal agencies, explicitly affirms "that the proposed national program would not alter California's longstanding authority under the Clean Air Act to have its own motor vehicle emissions program." [OAR-2009-0472-7263.1, p. 2]

It is especially important to continue to allow California, post-2016, to address the threat posed by emissions of greenhouse gases from cars. In part because of a strong history of energy conservation in the state, motor vehicles are California's largest source of greenhouse gas emissions and it will be difficult for the state to meet its GHG reduction requirements, enshrined in laws like California's Global Warming Solutions Act, without maintaining flexibility in dealing with passenger vehicle GHG emissions. California's greenhouse gas laws themselves have served as models for the nation, and many are looking to California's implementation of these laws as indicators of the potential success of GHG emission reduction programs more generally. For this reason as well, it would be a serious error for EPA to tie California's hands in regulating its most significant source of GHG emissions going forward. [OAR-2009-0472-7263.1, p. 2]

State of New Jersey

These reductions are critical [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 113.] for the state to achieve its 2020 and 2050 greenhouse gas goals. Future federal programs should not preempt the states from establishing appropriate greenhouse gas emission reduction programs, including additional motor vehicle programs as they are provided for by federal law. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 114.]

Several other northeastern states who like New Jersey have already adopted and implemented the low emission vehicle program, as well as California, we've heard from NESCAUM and NACAA earlier today, we support their comments of the states and the regional groups and will highlight issues covered in their testimony in our written comments. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 114.]

State of Washington Department of Ecology

The importance of preserving the Clean Air Act provision of state's rights to adopt motor vehicle standards - for California under Section 209 and for other states under Section 177 - cannot be overstated. The Federal Clean Air Act generally prohibits states from adopting new motor vehicle emission standards. However, Congress specifically authorized California to establish its own emission standards for cars. Courts upheld this approach:

Congress intended California to continue and expand its pioneering efforts at adopting and enforcing motor vehicle emission standards different from and in large measure more advanced than the corresponding federal program. [OAR-2009-0472-7299, p.1] Motor & Equipment Mfrs. Ass'n v. EPA ('MEMA I'), 627 F 2d 1095, 110-11 (D.C. Cir. 1979). [OAR-2009-0472-7299, p.2]

According to the National Academies' National Research Council, California has used its authority as Congress intended, by implementing more aggressive measures than the rest

of the country and serving as a laboratory for technological innovation. California's action paved the way for other states across the country to exercise their statutory authority under Section 177 of the Clean Air Act; 14 other states have adopted California's standards. As one of the first states to follow California's lead, Washington adopted California's GHG regulations on May 6, 2005. [OAR-2009-0472-7299, p.2]

The federal government has been a follower, not a leader, in vehicle emissions improvements. [OAR-2009-0472-7299, p.2]

California's statutory right to adopt more rigorous motor vehicle standards than the federal governments, and other states' rights to opt in to California's programs, must be acknowledged as the catalyst for this national vehicle GHG emissions reduction program. [OAR-2009-0472-7299, p.2]

EPA should join state and local clean air agencies as an active proponent for the full preservation of these states' rights. [OAR-2009-0472-7299, p.2]

Environment New Jersey

For most of this decade, you know, unfortunately, we've had to look to the states on clean car legislation, clean car advocacy. Now it's time as we grapple with this crisis finally to give the green light to clean cars on the national level and nowhere is that more appreciated than in states like New Jersey and the other states which Steve [Steve Flint of the Mobil Sources and Fuels Committee of the National Association of Clean Air Agencies (NACAA) EPA-HQ-OAR-2009-0472-4621, p.53-65] mentioned and that have become leaders on this issue. We believe firmly in the adage from Supreme Court Justice Louis Brandeis, the states are the laboratories of democracy, and I believe that was especially proven from the advocacy work over the course of this decade. [EPA-HQ-OAR-2009-0472-4621, p.67]

Second, specifically on the rule proposal, that it's a first strong step but must be strengthened to meet President Obama's proposals. [EPA-HQ-OAR-2009-0472-4621, p.68]

And then finally I want to point out the proposal is certainly strong evidence that the Clean Air Act is effective in addressing global warming pollution. California has obviously been the leader on adopting emission standards than are stronger than the federal regulations, and they have led the way, but they have allowed states like New Jersey that have similar needs and similar air pollution problems to opt in to those programs. We believe firmly as I stated before that states should have that right, states are the laboratories of democracy. We certainly encourage that provision to remain. [EPA-HQ-OAR-2009-0472-4621, p.77]

EPA Response:

As described in Section III.D.1 of the preamble to the final rule, EPA and NHTSA have worked extensively with the state of California and other states which have adopted the California GHG emission standards, as well as many other stakeholders, to craft a national fuel economy and GHG emission program which allows manufacturers to build a single national fleet that will comply with EPA's GHG and NHTSA's CAFE standards, and avoids the situation where manufacturers' sales must comply with different standards in individual states, each with their own sales mix, etc. We believe that we have succeeded in this task. .

EPA's final rule does not change California's authority to establish GHG standards for MY 2017 and beyond and to request a waiver of preemption under section 209 of the Clean Air Act for such standards, nor other states from adopting California standards which receive such a waiver.

Regarding the interaction between the NHTSA fuel economy standards and the EPA GHG standards, there are two reasons why EPA projects greater GHG benefits and fuel savings for its standards. One reason, as cited by the State of Massachusetts in Section 3.0, is the inclusion of reductions in GHG emissions from the air conditioning units present on motor vehicles. NHTSA currently declines to allow credits for GHG reductions due to improvements in air conditioning efficiency or leakage that are not accounted for under EPA's 1975 passenger car and light truck test procedures for CAFE. The other reason is that manufacturers lack certain flexibilities under EPA's GHG standards that are available under the CAFE standards, such as the use of automatic FFV credits through in MY2020 and the option of paying fines in lieu of compliance, which is permitted by the Energy Policy and Conservation Act. The difference in expected GHG reductions and fuel savings from EPA's GHG standards and NHTSA's CAFE standards can be seen in Tables I.C.1-2 and I.C.2-1 of the preamble to the final rule.

NADA commented (cited in Section 3.0 above) that NHTSA fuel economy standards should be used to regulate CO2 emissions from the tailpipe as measured over the two cycle test procedure and EPA should only establish supplemental standards to address air conditioning related emissions. EPA disagrees with this approach for several reasons. One, the NHTSA fuel economy standards appropriately focus on the conservation of fuel consumption by the nation, which has many benefits beyond GHG emission control. As such, the CAFE standards do not distinguish between the carbon intensity of various fuels. For example, vehicles fueled with gasoline and diesel fuel can have the same fuel economy, yet have different CO2 emissions. Thus, it is appropriate for the CAFE program to focus on the volume of petroleum-based fuel consumed in each case, while also appropriate for EPA to distinguish between the two fuels due to their distinct carbon (and thus, tailpipe CO2 emissions) per gallon. Two, other GHGs are emitted from the tailpipe besides CO2, such as methane and nitrous oxide, which are not currently controlled by the CAFE program per EPCA and EISA. Three, the combination of two-cycle tailpipe emissions and air conditioning-related emissions in one program provides manufacturers greater flexibility to select the most cost effective combination of control technology for their particular vehicles. This would not be possible with two separate programs due to the current inability of the CAFE program to accept increased

air conditioning related controls in lieu of compliance with the CAFE standards (including the statutory prohibition on such consideration for passenger automobiles). Four, the Clean Air Act is more flexible with respect to test procedures. In particular, EPA may find it desirable in the future to expand the test procedures used to measure GHG emissions beyond the current FTP and HFET test cycles in order to obtain more realistic estimates of the benefits of GHG emission control technology. Fifth, the CAA is more flexible than EPCA with regard to providing compliance flexibilities, which may allow opportunities for more cost-effective regulatory approaches for GHG reductions. Finally, the commitment by California to accept compliance with federal standards for purposes of its state GHG program is premised on issuance of EPA GHG standards as described in the Joint Notice of Intent, and compliance by the automobile manufacturers with EPA's GHG standards. Compliance with NHTSA CAFE standards for just these 5 model years would not lead to this result, nor would compliance with the much more limited GHG standards suggested by NADA. This would lead to the loss of this important benefit of a national program. EPA believes that these reasons amply justify the inclusion of CO2 emissions as measured over the current two cycle test procedure in its final GHG standards.

In the example above given by AAM, a manufacturer generating a greater level of direct (i.e., refrigerant emission related) air conditioning emission credit relative to EPA's projection would be able to use this "extra" credit to reduce the requisite degree of CO2 emission control over the two-cycle test procedure under the EPA program, but not under the NHTSA program. AAM recommends that the stringency of the CAFE standards be relaxed so that this situation could never occur.

As mentioned above, although as a practical matter, the means of achieving requirements of the CAFE and GHG programs overlap to a large degree, they in fact have two distinct purposes. One focuses on fuel consumption, while the other focuses on GHG emissions. Because of these distinct goals, it is perfectly reasonable for a manufacturer to continue to have to reduce the fuel consumption of its fleet despite implementing non-fuel related GHG emission controls at a greater rate than projected by EPA. In any case, that is an issue of how to set the CAFE standard under EPCA, which is under NHTSA's authority, and not how to set the GHG standard under the CAA.

That said, the two agencies have attempted to craft their final standards in such a way as to ensure that the additional stringency of one program relative to the other results in valuable benefits to the nation, either in terms of fuel conservation or GHG emission reduction. Any over-compliance with NHTSA's fuel economy standard would clearly be applicable to compliance with EPA GHG standards. In contrast, a manufacturer which implemented more than our projected level of air conditioning controls in the early years of the program would still be required to comply with NHTSA's fuel economy standards. This is essentially the issue raised by NADA in Section 3.0 above and by AAM and VW in this section. EPA acknowledges that some manufacturers could choose to generate more A/C credits than what we estimated in the rule for MY 2012-2015. However, the agency believes that the differences will be small for the fleet as a whole. The agency does not feel that this will cause any disharmony or inconsistency between the EPA and

NHTSA programs, or devalue such credits, as the manufacturers can bank any overcompliance credits for the next model year (or beyond). The compliance situation for the next model year may be quite different depending on that company's compliance burden and the ramp up rate of its standards (both CAFE and GHG). Therefore EPA disagrees with the Alliance comment that the different CAFE and GHG standard curves can discourage A/C improvements. The EPA has every reason to believe that all manufacturers will take advantage of these cost effective technologies to reduce GHG emissions from automobiles.

We disagree with NADA that this rule will have a negative impact on automotive dealerships. The two agencies appreciate the economic difficulties currently faced by many automobile dealerships and the fact that many have or could soon be forced to close. However, we believe that this is due to the current national and global economic downturn and the resulting decrease in vehicle sales and financial difficulties of several automotive manufacturers. The analysis supporting this rule clearly indicates that the fuel savings resulting from meeting the final standards far exceed the cost of the technology needed to achieve the standards. These costs include the costs of maintaining vehicle performance, utility, safety, and other characteristics, so that vehicles should be as acceptable to consumers as current models. Moreover, our analyses also reasonably project increased vehicle sales, and do not project loss of sales attributable to the rule. This calculation was done assuming that consumers consider only five years of fuel savings when buying vehicles, an assumption endorsed by NADA. That, coupled with the avoidance of the cited "patchwork" of state standards is expected to avoid any negative impact on automotive sales. .

The analysis in section 3.1 of the RIA describes how the EPA 250 g/mi CO_2 equivalent fleetwide standard for 2016 achieves the level of control which would have been achieved by the California GHG standards in the State of California. However, that equivalency is not the basis for our selection of this level of control for the final EPA GHG standards, and we thus cannot accept the comment by NADA cited in Section 3.0. See section III.D (and in particular III.D. 6) of the preamble to the final rule which discusses the basis for the GHG standards and their feasibility. The basis for the final standards is a balance of the technical feasibility of the standards, the cost of this technology and the lead time needed to implement it, considerations of costs to consumers, the cost-effectiveness of needed technology, and the benefits which will accrue from the standards (among other factors), as described particularly in section III.D of the preamble to the final rule. Although the level of the California standards, and the technical analysis underlying those standards, was a reasonable starting point for evaluating a national GHG standard, the California standards are not the justification for the federal standards. See section III.D.1 of the preamble to the final rule. Achieving some degree of equivalence with the benefits of the California standards was an important aspect of obtaining cooperation from the state of California and the other states which had adopted California's standards to accept compliance with the EPA standards as compliance with their own standards. However, the standards reflect consideration of the relevant factors under section 202 (a) (1) and are justified on that basis.

EPA Response to Comments

With respect to the comment that the EPA GHG standards for motor vehicles will be detrimental under a broader cap and trade regulation, this issue is currently not ripe as no such cap and trade program exists; nor has one been proposed by the agency. EPA will carefully consider the interaction between the final motor vehicle GHG standards and any future cap and trade program if and when a national cap and trade program exists.

With respect to IPI's recommendation that EPA establish a broad regulation covering all mobile source GHG emissions, EPA is taking this initial action with respect to automobiles alone due to the impending timing of both California GHG standards and NHTSA CAFE standards. It is highly desirable that national GHG standards be coordinated with these other actions now versus the necessarily later date when more comprehensive regulations covering additional mobile sources could be established. EPA is currently working on GHG emission controls from other mobile sources, again in coordination with NHTSA fuel economy regulation as appropriate. We will take IPI's recommendations under consideration as the extent of GHG emission control from mobile sources expands. See State of Massachusetts v. EPA, 549 U.S. at 533 (EPA retains significant discretion as to timing of regulation).

We do not understand the purported distinction being made by VW regarding the methodologies used to determine the fleet average fuel economy and GHG emissions under the two programs. The harmonic averaging of fuel economy essentially means the simple sales-weighted averaging of fuel consumption per mile. As fuel consumption per mile is proportional to CO2 emissions per mile for a given fuel, the two programs perform their sales-weighting consistently. There exist several statutory restrictions on the trading of car and truck credits under the CAFE program which cannot be avoided. EPA chose not to impose those restrictions, as it is not required by law to do so. This simply makes compliance with the EPA GHG standards somewhat more flexible. However, the analyses conducted by NHTSA demonstrate that the CAFE standards are feasible for the vast majority of sales under the final provisions of that program. In fact, VW is one of the manufacturers which has historically paid CAFE fines in lieu of compliance. EPA analyses indicate that VW may need to utilize more advanced technology on a greater percentage of its sales than most manufacturers in order to comply with the two programs. EPA analyses indicate that this is at least partly due to the fact that VW vehicles are heavier than other vehicles in their size classes. See Fig. III-D.6-1 and surrounding text in the preamble to the final rule. VW has not provided any information to demonstrate why this needs to be the case currently or in the future. VW has also not provided any information indicating that they are unable to implement for their U.S. sales volumes the types of advanced technologies which are already commercially available.

EPA recognizes that several analyses have indicated that new vehicle purchasers do not always choose technology which pays for itself in terms of fuel savings. See chapter 8.1.2 of the RIA and section III.H.1 to the preamble to the final rule. There are several possible reasons for this, but no consensus exists concerning the actual cause. We will continue to study this issue, along with others in the scientific and economic community. We believe that the implementation of the types of fuel savings and emission control

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technology projected in the analyses supporting these rules will provide direct consumer benefits far exceeding their cost, as well as important emission reduction related benefits for the national and global communities.

3.2 Form of the standards

Organization: Mercedes-Benz (Daimler AG)
International Council on Clean Transportation
European Small Volume Car Manufacturers' Alliance (ESCA)

Comment:

Mercedes-Benz (Daimler AG)

By choosing footprint as the attribute to apply in the joint rulemaking, the agencies have, indeed, created a mechanism for encouraging weight reduction in light trucks while maintaining vehicle size and functionality. The safety of the light truck fleet is enhanced by encouraging light trucks with lower centers of gravity, thereby reducing rollover risks. Functionality is maintained even as weight is reduced because the footprint system encourages lightweight materials. While traditionally changes in mass and size have been directionally consistent from a compatibility standpoint, with the advent of crash avoidance systems, expansion of crash energy distribution techniques and continued improvement in behavioral safety, smaller vehicles with advanced emissions controls can be safely incorporated into the current vehicle mix.

That the relative stringency of the passenger car and light truck fleet has been quite stable, moreover, does not appear to reflect a policy determination as much as the fact that the standards for many years remained either frozen or moved in increments which would not have had a significant impact on the relative apportionment of the standards. The passenger car standard has remained at 27.5 mpg since 1990, and the light truck standard remained at 20.7 from 1996 through 2004, when NHTSA began to increase it incrementally. When NHTSA set new standards for MY 2011, the agency readjusted the curves to account for its decision to reclassify 2wd SUVs and crossovers as passenger cars and thus retained the traditional relative apportionment. See 74 Fed. Reg. 14196 (March 30, 2009). NHTSA did not, however, consider the relative apportionment of stringency as between light trucks and passenger cars as a matter of policy.

This rulemaking represents the first opportunity for the agencies to consider the comprehensive policy objectives of the joint proposal while establishing standards for passenger cars and light trucks. The agencies can achieve this objective, and promulgate a final rule that is in fact "as substantially described in the May, 2009 Notice of Intent to conduct rulemaking," by setting the stringency of the passenger car standards for the model years leading up to MY 2016 according to a "generally linear phase-in." Doing so would also be consistent with the goal of the rulemaking to adjust the fleet mix to improve emissions and fuel economy performance without affecting safety. [OAR-2009-0472-7193.2, p.2-4]

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International Council on Clean Transportation (ICCT)

We commend EPA and NHTSA for proposing a footprint-based adjustment to the CAFE standards instead of weight-based adjustments. Footprint-based adjustments fully encourage manufacturers to introduce lightweight materials, which can improve vehicle efficiency by 20% or more in the long run. Lightweight materials also extend the electric drive range of electric and plug-in vehicles by a similar amount. This is one area of policymaking where the U.S. is ahead of the rest of the world. Japan, Europe, and China have all adopted standards with weight-based adjustments that effectively discourage the use of lightweight materials. NHTSA pioneered the footprint concept with the 2011 light truck rule and we urge EPA and NHTSA to continue its use in the future.

We also support the proposed change to the shape of the footprint adjustments. The linear slope for all but the largest and smallest vehicles provides a consistent signal to improve efficiency for all vehicles within this range, while the flat line for largest vehicles creates an incentive to make the largest vehicles smaller.

The proposed rule maintains separate footprint curves for cars and light trucks. This subjects light trucks with the same footprint to much less stringent standards and gives manufacturers a tremendous incentive to reclassify cars as light trucks. In the past this has brought us such notable trucks as the Subaru Outback, Chrysler PT Cruiser, Dodge Magnum, Mazda 5, Chevrolet HHR, Porsche Cayenne, and BMW X6, which BMW describes as a Sports Activity Coupe. In the future it is likely to cause manufacturers to drop many 2wd versions of their small SUVs and make less efficient 4wd versions standard, so that they can be classified as light trucks instead of cars. This will actually increase overall real world fuel consumption and CO2 emissions in two ways. First, it will increase 4wd installation and directly increase the fuel consumption of the fleet. Second, it makes it easier for manufacturers to meet the standards, so that they do not have to implement as much technology on other vehicles.

The large majority of light trucks today are based on car platforms with unibody construction. All minivans use unibody construction and cab-and-chassis construction for SUVs is rapidly disappearing. Except for pickup trucks and a few relatively low volume SUVs, such as the Jeep Wrangler and the Suburban, in the 2016 timeframe of the rule all light trucks will be based on car platforms. In addition, due to the empty pickup bed, pickup trucks are considerable lighter than truck-based SUVs with the same footprint and fit much better on a single footprint line. Thus, there is no technical reason to maintain separate footprint lines for cars and light trucks.

EPA recognized the importance of this issue when it established a single Tier 2 emission standard for all cars and light trucks. The issue here is just as important. It is time to also end this artificial distinction between cars and light trucks for fuel efficiency and greenhouse gas emissions. A single footprint function will still give larger trucks a less stringent target to meet, while avoiding vehicle classification games and helping to ensure fuel consumption and GHG emission goals are actually met.

[OAR-2009-0472-7156.1, pp.2-3]

Organization: Toyota Motor North America

EPA also requests comments on combining the entire fleet into a single compliance category, with a single target curve for the fleet each model year. If faced with just one federal program with which to comply, Toyota may not object to a combined fleet standard, since it would arguably provide manufacturer's with the greatest level of flexibility to comply and it would remove any concerns about vehicle classifications. However, due to the lack of harmonization with NHTSA's program that would result, and the inflexibility afforded NHTSA in the existing CAFE statute, Toyota would not support EPA setting a single target curve for the entire fleet of cars and trucks even though it would result in the greatest level of flexibility. [OAR-2009-0472-7291, p.7]**EPA**

EPA Response:

EPA appreciates the comments concerning the relative stringencies of the NHTSA CAFE standards for cars and light trucks prior to MY 2012. There is no need to evaluate or to respond to these comments, however, as they are not germane to the EPA standards being proposed for 2012 and beyond.

EPA also understands ICCT's concern that manufacturers may have an incentive to convert two-wheel drive (2WD) vehicles SUVs to all-wheel drive (AWD) or four-wheel drive (4WD) in order to have these vehicles classified as trucks instead of cars, and thus reduce their applicable corporate fuel economy standard and increase their applicable corporate GHG standard. NHTSA modified its definition of trucks in its rule implementing the MY 2011 CAFE standards in order to counter manufacturers' actions which shifted vehicles with many car-like designs to the truck fleet. On the one hand , since the vast majority of the SUVs newly classified as cars are also available in AWD or 4WD versions, manufacturers face few if any redesign hurdles in shifting these vehicles back to the truck fleet by emphasizing AWD or 4WD sales through sales incentives or by simply offering these vehicles in only AWD or 4WD versions. On the other hand, AWD or 4WD vehicles cost more to produce than 2WD versions and usually have lower fuel economy and higher CO2 emissions (though to a much lesser degree than the difference between the car and truck standard curves). Thus many consumers still may not desire to purchase 4WD vehicles because of concerns about cost premium and additional maintenance requirements; conversely, many manufacturers often require the 2WD option to satisfy demand for base vehicle models. The agencies note that many luxury SUVs are only offered with AWD or 4WD functionality, so vehicle purchasers appear to value these options. EPA will monitor this situation and assess the degree to which manufacturers attempt to relax the stringency of their applicable fuel economy and GHG standards by shifting sales of 2WD SUVs from their car fleets to their truck fleets. Should this occur, the agencies will evaluate further changes to the definition of cars and light trucks, as well as the relative stringency of their respective standards to address this situation in the future.

EPA Response to Comments

Regarding the comment that the agencies should move towards single footprint-based standards for both cars and trucks, NHTSA addresses this issue with respect to the CAFE standards in section IV of the preamble to the final rule. Regarding the GHG standards, EPA believes that it is appropriate for the 2012-2016 MY period to utilize NHTSA's definition of cars and trucks to maximize consistency between the two sets of standards. For the purpose of this rule, the levels of the car and truck GHG curves are closely connected to the 2011 NHTSA definitions of cars and trucks. Were EPA to either utilize a different set of vehicle definitions or establish a single standard curve, the overall level of GHG control would be roughly the same given the same level of technology application. However, the impacts of specific manufacturers of doing so would be very large in some instances. EPA believes that more leadtime should be available before such dramatic changes to the relative stringency of the GHG standards across manufacturers should be effected.

EPA notes that the incremental cost for a larger light truck to achieve the Tier 2 emission standards relative to that for a car is much smaller than the incremental cost for a large truck to achieve the fuel economy or GHG emission level of a car. In part that is because tailpipe emissions of the criteria pollutants are largely driven by the after treatment catalyst and related technology, while the factors that affect GHG emissions are much more varied and involve a much wider variety of systems in the vehicle. This leads to larger differences between vehicles as far as baseline technology that impacts GHG levels and GHG controls. Thus, while the equivalent treatment of cars and trucks in EPA's Tier 2 emission control program is an appropriate analogy with respect to this GHG program, the technology and economic implications are much greater and we believe that further study would be necessary to justify such large relative economic impacts across manufacturers.

3.2.1 Choice of footprint as the attribute and international harmonization

Organization: General Motors
Ferrari S.p.a
Toyota Motor North America
Northeast States for Coordinated Air Use Management
BMW of North America, LLC (BMW)
Lawrence Berkeley National Laboratory
SABIC Innovative Plastic
International Council on Clean Transportation
National Automobile Dealers Association (NADA)
Lotus Cars Ltd.
Cummins Inc.
Porsche Cars North America, Inc.
Fisker Automotive, Inc.
European Automobile Manufacturer's Association
New York State Department of Environmental Conservation
Ecology Center

Bright Automotive
Johnson, Kenneth C.

Comment:

General Motors

Among the highlights of the proposal is the coordinated attribute-based approach of the two programs. [OAR-2009-0472-6185, p.11]

GM especially supports: 1) the coordinated attribute based approach of the two harmonized programs; and 2) the recognition of the need for mechanisms to provide for compliance flexibility in the face of great uncertainty over future technology developments and costs, customer acceptance of these technologies, and the price of fuels that consumers may see in the marketplace. All of these factors make it critical that automakers have some ability to cope with changes or unexpected outcomes, and we believe the proposed rules provide essential flexibility. [OAR-2009-0472-6953.1, p.2]

Ferrari S.p.a

Ferrari concurs with EPA and NHTSA that the method to classify vehicles should be as simple as possible, and based on reliable and stable attributes. Moreover, we support the harmonization of the EPA and NHTSA rules in the National Program. Nonetheless, we are concerned that the footprint alone does not take into account many of a vehicles' other characteristics that greatly affect the fuel economy. For example characteristics like the engine, transmission, curb weight, aerodynamics, etc. We treat this topic with more details in the comments to the proposed NHTSA CAFE rule. We support the adoption of a constrained linear rather than a constrained logistic function. We think it is not necessary to put a "backstop" for both CO2 and CAFE standards. [OAR-2009-0472-7214.1, p.3]

Toyota Motor North America

EPA requests comments on its proposal to use a footprint-based attribute approach for regulating GHG emissions. Toyota supports EPA's selection of footprint, subject to the additional comments below regarding Emissions Covered. Toyota supports harmonization of the EPA and NHTSA programs to the greatest extent practicable. Since NHTSA has already established footprint as the attribute upon which the CAFE program is based, and they have continued use of footprint in the subject proposal, Toyota agrees with EPA's selection of footprint as the attribute for its program. This approach will result in harmonization of the two regulatory programs in terms of the attribute upon which the standards are based. [OAR-2009-0472-7291, p.6]

Northeast States for Coordinated Air Use Management

NESCAUM concurs with and supports the EPA and DOT decision to use an attribute-based standard rather than an industry-wide average standard.

Footprint-based standard: NESCAUM agrees with EPA's approach to regulate vehicle footprint. Consistent with the model year 2011 CAFE standards, EPA and DOT are proposing to use footprint as the attribute for the model year 2012-2016 CAFE standards and CO2 emissions standards. Footprint-based standards provide an incentive to use new and advanced lightweight materials and structures that could otherwise be discouraged by weight-based standards. Manufacturers can use them to improve a vehicle's fuel economy without necessarily resulting in a change in the vehicle's target level of fuel economy or CO2 emissions and without a substantial impact on the safety (in terms of crashworthiness) of that vehicle.

EPA has crafted the proposal in a way that ensures consumers will continue to have the variety and choice in vehicle models they have come to expect. The size-based standard provides manufacturers with significant flexibility in meeting the proposed GHG reductions. Furthermore, as mentioned above, technologies to reduce vehicle GHG emissions exist in the market today. The phase-in of the standards between 2012 and 2016 allows manufacturers six years to incorporate these technologies into greater numbers of vehicles. [OAR-2009-0472-7235.1, p.4]

[Northeast States for Coordinated Air Use Management also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, p. 43.]

BMW of North America, LLC (BMW)

With respect to one national program. BMW fully supports an attribute-based program for passenger cars and light trucks as proposed by EPA and NHTSA. Compared to a uniform standard for passenger cars and light trucks, an attribute-based standard drives fuel efficiency and GHG reduction in all segments while taking into account the manufacturer's product portfolio. However, because BMW offers a worldwide product portfolio and most of the C02 and fuel economy regulations worldwide are based on vehicle weight instead of footprint, BMW recommends that these regulations be harmonized as much as possible. [OAR-2009-0472-7145.1, pp.4-5]

[BMW of North America also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, p. 133.]

Lawrence Berkeley National Laboratory

Comments are directed at the choice of vehicle footprint as the attribute by which to vary fuel economy and greenhouse gas emission standards, in the interest of protecting vehicle occupants from death or serious injury. Comments are summarized below:

Analysis of casualty risk finds that, after accounting for drivers and crash location, there is a wide range in casualty risk for vehicles with the same weight or footprint. This suggests that reducing vehicle weight or footprint will not necessarily result in increased fatalities or serious injuries.

Indeed, the recent safety record of crossover SUVs indicates that weight reduction in this class of vehicles resulted in a reduction in fatality risks.

Computer crash simulations can pinpoint the effect of specific design changes on vehicle safety; these analyses are preferable to regression analyses, which rely on historical vehicle designs, and cannot fully isolate the effect of specific design changes, such as weight reduction, on crash outcomes.

There is evidence that automakers planned to build more large light trucks in response to the footprint-based light truck CAFE standards. Such an increase in the number of large light trucks on the road may decrease, rather than increase, overall safety. [NHTSA-2009-0059-0060.1, p.1]

See all the casualty analysis related to vehicle footprint in pp.2-11 of the docket.

SABIC Innovative Plastic

SABIC-IP supports the footprint-based regulatory program proposed because it encourages both appropriate materials substitution on existing products and the development of a safe, lighter-weight vehicle fleet. [OAR-2009-0472-7080.1, p.2]

International Council on Clean Transportation

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 58.]]

We commend EPA and NHTSA for proposing a footprint based adjustment to the CAFE standards instead of weight based adjustments. Footprint based adjustments fully encourage manufacturers to introduce lightweight materials, which can improve vehicle efficiency by 20 percent or more in the long run. Lightweight materials also extend the electric drive range of electric and plug-in vehicles by a similar amount.

This is one area where the U.S. is ahead of the rest of the world. Japan, Europe, and China have all adopted standards with weight-based adjustments that discourage the use of lightweight materials. NHTSA pioneered the footprint concept with the 2011 Light Truck Rule, and we urge EPA and NHTSA to continue its use in the future.

National Automobile Dealers Association (NADA)

The proposal's vehicle attribute-based framework is essential to driving fuel economy performance improvements while allowing dealers to access a mix of cars and trucks that

meet their customer needs. As recognized by EISA, attribute-based standards offer at least four critical benefits over "flat" standards. First, greater fuel economy and GHG emission benefits can be expected as continuous improvements are encouraged across all vehicle types, regardless of product mix. Second, if set correctly, an incentive to the inexpensive downsizing or downweighting of vehicles is eliminated, helping to preserve passenger safety. Third, an attribute based approach inherently is more equitable in that it is largely product plan neutral, acting to spread compliance costs broadly across all regulated vehicle manufacturers. Finally, and perhaps most importantly, by avoiding mandated fleet mixes, an attribute-based approach recognizes and capitalizes on the critical consumer choice factors that drive a successful fuel economy/GHG improvement program. As stated above, hoped-for fuel economy and GHG benefits simply will not be realized until consumers purchase and use the regulated vehicles in question. [OAR-2009-0472-7182.1, p.4]

The National Program proposal's standards are based on a footprint (average track width times average wheelbase) attribute and a continuous function (vs. step function) curve similar to that first used in the 2006 light truck CAFE rule. Appropriate dispensation must be allowed to help ensure the final National Program does not frustrate customer demand for new light trucks as their maximum towing, cargo-hauling, and four-wheel drive (4WD)/all-wheel drive (AWD) capabilities are essential to certain vocational and recreational demands. Business and consumer purchasers focused on vehicle utility and durability buy light trucks for their capability and performance characteristics and 4WD and AWD options are popular for off-road commercial and recreational use and for on-road handling benefits. Tow-capable configurations or "packages" are essential to many uses. Having a wide variety of vehicles available for use in trade or business particularly is essential to the small business community which drives the U.S. economy. Large and powerful light trucks are essential to many business purchasers (e.g., farmers, contractors, etc.), and larger vans and SUVs are often the first choice of growing families and carpoolers. The stringency of the light truck curve must not constrain the ability of vehicle manufacturers to meet these market needs, as it would leave the motoring public no choice but to keep older, less efficient vehicles longer or to turn to the used vehicle marketplace. [OAR-2009-0472-7182.1, pp.4-5]

The attribute-based, continuous curve framework is designed to foster real world fuel economy improvements and GHG reductions by maintaining consumer choice, by protecting safety, by distributing costs more equitably, and by reducing the overall cost of regulation. These same benefits also argue for downward sloping curves without any flattening at the lower asymptote. Any constant value or "clip" applied to the end of a curve could serve to severely limit the availability or performance of vehicles demanded by the motoring public, especially light trucks, effectively imposing an unwarranted "backstop" compliance overlay. [OAR-2009-0472-7182.1, p.5]

Lotus Cars Ltd.

The proposed legislation attempts to account for differing vehicle segments with size-based standardization; however such an approach can only work together with fleet

averaging if the fleet itself can be considered 'average'. The footprint of a vehicle does not differentiate to a sufficient degree between vehicle segments for this approach to work with small volume manufacturers. In practice, it is quite possible for a sports car to have the same footprint size as a compact saloon vehicle, which would result in the applicability of a similar greenhouse gas target. [OAR-2009-0472-7249, p.6]

Cummins Inc.

Cummins supports the attribute-based standards for setting CAFE and GHG standards; however, we urge EPA and NHTSA to consider a secondary attribute for light-duty trucks (with significant hauling and towing capacity as well as off road capabilities) for determining the target fuel economy/CO2 emissions. Trucks primarily used for work purposes (e.g. trucks equipped with diesel engines), are engineered for heavier use (more capable components) resulting in lower fuel economy than similar truck meant for light-load use. Cummins supports a proposal for creating a separate classification for heavy-tow, highly capable trucks which would provide a more equitable framework for vehicles meant for towing and cargo-hauling. The SAE J2807 recommended practice provides a robust framework to define a tow rating for vehicles and eliminates potential gaming, as noted by NHTSA in an earlier NPRM. [OAR-2009-0472-7205.1, p.4]

Porsche Cars North America, Inc.

Porsche's sport car average footprint (the basis for our target standards) is:

• The smallest in the industry

• 14% less than the industry average

• considerably smaller than companies known for producing small cars (e.g., Honda, Toyota, Suzuki, etc.)

Because the standards proposed are entirely based on footprint and because our footprint is the smallest, the proposed standards for Porsche are the most stringent. While we do not believe that it is the intent of EPA/DOT to make Porsche the world's most fuel efficient passenger car manufacturer or to punish Porsche, this is the consequence of the footprint-based concept. While there is a reasonable correlation between footprint and fuel economy and C02 for the average fleet of cars there are cars for which this does not apply. Sports cars, especially Porsche cars have a very short wheelbase for handling reasons in combination with high performance, which is an attribute associated with sports cars and a selling point. Unfortunately the standard in this footprint category is set by small, low priced sedans, a category where fuel economy is an important selling attribute rather than performance.

In proposing to establish standards based entirely on vehicle footprint, EPA and DOT have proposed a set of standards that would perversely require Porsche (a company

predominantly manufacturing high-powered sports cars) to become the fuel efficiency leader in the United States.

In Figure 1 [OAR-2009-0472-7431.1, p.5] below, using the proposed standards shown in the tables above, we have plotted the percent improvement required for compliance for each manufacturer. We show the percent improvement required relative to 2008MY performance since this is the most recent model year for which complete fuel economy model year data was available at the time at which these comments were initially drafted.

It should be understood that, according to the proposal, Porsche is expected to achieve a passenger car fuel economy level of 41.4 mpg (or 204 g/mi C02) by 2016MY. This is by far the highest mpg value demanded of any auto maker affected by the proposal. [OAR-2009-0472-7431.1, pp.1-6]

Fisker Automotive, Inc.

Fisker Automotive recommends a flat standard to avoid irrational trends to certain vehicle sizes or types. That is, the standard's emissions allowance should not correlate to footprint or separate passenger cars from light□duty trucks. The regulation, as proposed, appropriates more credits to larger vehicles and trucks, causing an economic incentive not only to increase fuel economy, but to increase vehicle footprint and to classify as a truck as well. The market should decide vehicle sizes and types. [OAR-2009-0472-8732.1, p.5]

Automakers have many options available to decrease emissions, including electrification, powertrain efficiency increase, weight reduction, and aerodynamic drag reduction, etc. Regulation should remain neutral to allow all methods of improvement. Averaging, banking, and trading methods are sufficient to maintain diverse consumer choice of vehicles. [OAR-2009-0472-8732.1, p.5]

The Fisker Karma, for example, will do unusually well under the proposed footprint method because it has a very large footprint and superb fuel economy, well beyond 2016 targets. If we chose to make a version of the Karma with a smaller footprint, it would actually do worse under the proposed regulation, even if the utility (e.g. seating, storage space, and performance) and fuel economy remained exactly the same. This does not make sense. In a competitive market, automakers will be driven to sell larger vehicles and trucks for the increased credits. We would like the freedom to design our vehicles without concern for these footprint and classification metrics. [OAR-2009-0472-8732.1, pp.5-6]

While larger vehicles can be made safer, this is not always the case. For example, many large SUVs are considerably more dangerous than smaller vehicles due to rollover concerns. NHTSA can (and does) implement safety regulations to directly address safety issues. We consider it best to handle safety in this manner, separately from emissions. A flat standard would remain neutral to size, as consumer demand will remain for large vehicles. Furthermore, hybrid and electric vehicles do not suffer in fuel economy from

weight increase nearly as much as traditional vehicles due to their regenerative braking capability. This will also serve to maintain diverse consumer choice of vehicles. [OAR-2009-0472-8732.1, p.6]

Finally, causing a trend towards larger vehicle footprints can have adverse environmental affects. Material requirements would increase, and unless automakers take considerable effort to avoid it, environmental impact (e.g. CO2 emissions) of vehicle production would increase in step. The regulation should serve to put a market value only on metrics of concern to the regulation—GHGs and fuel. [OAR-2009-0472-8732.1, p.6]

European Automobile Manufacturer's Association

ACEA emphasizes that any legislation should in principle not be technology prescriptive. Also, efforts with a view to increasing international harmonization of motor vehicle regulations should be maintained where appropriate. [OAR-2009-0472-7444.1, p.1]

New York State Department of Environmental Conservation

Use of Footprint as a Basis for Standards (Preamble Section III.B.2)
EPA proposes an attribute based greenhouse gas standard, using vehicle footprint as the basis. NHTSA is required by statute to establish attribute based CAFE standards. The benefit of harmony between the CAFE and greenhouse gas standards outweighs any potential benefits an alternate form of greenhouse gas standard might have, and we believe that footprint is at least as valid as any other attribute. [OAR-2009-0472-7454, p.1]

Ecology Center

One key aspect of the proposed rules is the attribute-based system for determining fuel economy standards. This approach ensures that fuel-economy progress will be made across the broad spectrum of vehicle types and sizes, rather than just through downsizing or by certain manufacturers. In the past, the fleet average approach has tended to put full-line manufacturers with market share in the larger vehicle segments at a significant disadvantage. Now all manufacturers will share the burden of improving the fuel economy of their vehicles. The Ecology Center also believes that using the vehicle footprint attribute is the most preferable from an environmental and safety perspective to a weight-based approach. [OAR-2009-0472-4068, pp.1-2]

Bright Automotive

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, pp.173-179]

I'd like to also applaud the footprint standard because, again, we do not want to force a single solution into downsized vehicles. We want to be able to allow our customers and Americans to drive vehicles in the size they want.

That being said, lightweighting is an extremely important driver for electrification in meeting these standards and importantly for the safety concerns as well. There is a strong correlation between weight and size for safety, but there's even -- I'm sorry. Weight and safety. There's a stronger correlation between size and safety.

So if you can decouple weight and size, what you can get are vehicles that are large like our 63-square-foot light truck that are safe and not just safe to the occupants but safe to other drivers and pedestrians.

Johnson, Kenneth C.

These comments are respectfully submitted in response to the following request, on page 49685 of the Notice of Proposed Rulemaking (NPRM):

… while NHTSA tentatively concludes that footprint is the most appropriate attribute upon which to base the proposed standards … we seek comment on whether the agency should consider setting standards for the final rule based on another attribute or another combination of attributes. [OAR-2009-0472-7135.1, p.1]

One of the key recommendations of the 2002 NAS Report was the following:

Recommendation 3. Consideration should be given to designing and evaluating an approach with fuel economy targets that are dependent on vehicle attributes, such as vehicle weight, that inherently influence fuel use. Any such system should be designed to have minimal adverse safety consequences. (emphasis added) [OAR-2009-0472-7135.1, p.1]

The NPRM deviates from this recommendation by adopting a footprint attribute, which does not inherently influence fuel use. In contrast to weight, there is no clear causal connection between footprint and fuel economy, as evidenced by their poor correlation. [OAR-2009-0472-7135.1, p.1]

The poor correlation is clearly evident from the current fuel economy and footprint data provided in the NPRM, Tables IV.C.1–2 and IV.C.1–4a. This data is plotted in the attached Figure 1. (Each data point represents a particular manufacturer; and the X's and O's represent passenger cars and light trucks, respectively.) By contrast, weight is strongly correlated to fuel economy across all manufacturers and vehicle classes (Table IV.C.1–5a, attached Figure 2). Furthermore, the weight correlation is stronger than that of power-to-weight ratio, even though the latter is also causally related to fuel economy (Table IV.C.1–6a, attached Figure 3). [OAR-2009-0472-7135.1, pp.1-2]

The policy rationale for favoring a footprint attribute over weight is based on the two competing objectives of discouraging weight-changing compliance strategies that would adversely impact safety or consumer choice, and also encouraging weight-changing strategies that would improve fuel economy without adversely affecting consumer welfare. The NPRM recognizes that the rulemaking does not effectively balance these

objectives. As noted on pages 49462-49463, "… even under attribute-based standards, there is still risk that manufacturers will rely on downweighting to improve their fuel economy (for a given vehicle at a given footprint target) in ways that may reduce safety". Furthermore (page 49725), "NHTSA cautions that vehicle footprint is not synonymous with vehicle size. Since the footprint is only that portion of the vehicle bounded by the front and rear axles and by the wheels, footprint based standards do not discourage downsizing the portions of a vehicle in front of the front axle and to the rear of the rear axle … The crush space provided by those portions of a vehicle can make important contributions to managing crash energy." [OAR-2009-0472-7135.1, p.2]

The NPRM suggests that a weight-based standard would create perverse incentives to increase weight. As noted on page 49685, "it is relatively easy for a manufacturer to add enough weight to a vehicle to decrease its applicable fuel economy target." However, it is not easy to add weight without also compromising fuel economy, and thereby nullifying the advantage of a less stringent target. A weight-based standard would, by design, neutralize – not increase – weight-changing incentives. It would nullify the large weight-reduction incentive of an attribute-neutral standard, but would not reverse that incentive. [OAR-2009-0472-7135.1, p.2]

The primary drawback of a weight-based standard is that it would create no incentive for beneficial weight-changing compliance strategies. But since the regulatory incentive would be substantially weight-indifferent, the standard would also not incentivize detrimental weight changes; and it would not conflict with complementary policies that are targeted specifically at creating favorable (e.g., safety-enhancing) weight-changing incentives. [OAR-2009-0472-7135.1, p.3]

The proposed footprint attribute cannot optimally balance the tradeoff between favorable and unfavorable weight changes because it does not discriminate between the two. For example, the NPRM states on page 49685 that "footprint-based standards provide an incentive to use advanced lightweight materials and structures that would be discouraged by weight-based standards". But the standards would not incentivize downweighting exclusively by such means. As stated on page 49727, "… weight can be removed by downsizing, rather than material substitution, even while maintaining footprint". [OAR-2009-0472-7135.1, p.3]

How can the weight-change conundrum be resolved? The solution can be illustrated by analogy with a similar problem in the electricity industry. [OAR-2009-0472-7135.1, p.3]

A power utility can reduce emissions by using cleaner energy-generation technology (i.e. reducing GHG emissions per generated kWh). It can also reduce emissions by investing in energy efficiency (i.e. reducing kWh consumption per unit of consumer utility). For example, it could finance or subsidize home weatherization programs, efficient lights and appliances, etc. But an emission performance standard based on GHG emissions per kWh would, in effect, award emission allowances in proportion to energy generation, and would therefore provide no incentive for reducing energy consumption. How can this problem be resolved? [OAR-2009-0472-7135.1, p.3]

One approach would be to award emission allowances in relation to some kind of attribute, such as a generating facility's "footprint," which would somehow balance the competing incentives. But a more practical approach would be to simply recognize that promoting clean energy generation and energy efficiency are independent, separable problems that can be addressed with separate, complementary policies. A GHG-per-kWh performance standard could effectively induce clean energy generation, while a separate regulatory measure would be employed to promote energy efficiency. [OAR-2009-0472-7135.1, p.3]

Similarly, the vehicle regulation problem can be efficiently partitioned into two separate problems: one of minimizing emissions per unit weight, and one of minimizing weight per unit of consumer utility. Furthermore, safety could also be addressed as a separate regulatory problem – the regulations should not, in effect, use weight (or footprint) as a proxy for safety. Trying to solve all of these problems with one standard, as the NPRM proposal does, leads to regulations that are over-constrained and therefore suboptimal. [OAR-2009-0472-7135.1, p.4]

The NPRM notes, on page 49724, that "The question of the effect of changes in vehicle weight on safety in the context of fuel economy is a complex question that poses serious analytic challenges …," but these complexities can be circumvented by using a weight-based standard that would, by design, create no significant weight-changing incentives. Instead, the "serious analytic challenges" would be localized in a separate, complementary regulatory measure, which would be specifically and exclusively targeted on motivating optimal weight-changing strategies. This measure, unlike the proposed footprint-based standard, would discriminate between strategies based on their consumer-welfare impacts; and it would preferentially and selectively focus incentives on beneficial strategies. [OAR-2009-0472-7135.1, p.4]

In one approach, optimal weight reduction could be incentivized by a crediting system somewhat analogous to air conditioning credits. "Weight credits" would be awarded for the use of qualified engineering materials based on their equivalent utility characteristics. For example, if a vehicle manufacturer replaces 1000 lbs of steel with 600 lbs of functionally equivalent, high-strength composite material, then the 400-lb difference would be added to the vehicle weight for the purpose of determining its compliance requirement under a weight-based standard. [OAR-2009-0472-7135.1, p.4]

Safety concerns could similarly be addressed through regulatory measures that apply specifically to safety-related vehicle attributes. For example, vehicle safety regulations might specify a minimum vehicle footprint-to-weight ratio, or a maximum center-of-gravity height as a proportion of track width. [OAR-2009-0472-7135.1, p.4]

A weight-based standard, complemented with optimal weight-reduction incentives and safety-related regulations, would achieve all of the objectives that the footprint-based standard is intended to achieve, but without the tradeoffs inherent in a one-size-fits-all regulatory approach. The benefits of this approach would include some or all of the following: (1) less disparity in manufacturers' and consumers' compliance costs, (2)

improved economic feasibility (and consequently, potentially more stringent emission targets), (3) better preservation of consumer choice, and (4) enhanced safety. [OAR-2009-0472-7135.1, p.4]

The separate, but complementary, regulation of fuel economy and emissions by NHTSA and EPA argues in favor of a similar separation of weight-changing and safety regulations; and a weight-based standard would represent a step toward harmonized international standards. (China, Japan, and the European Union use weight-based standards.) Inasmuch as this approach has not been identified as a regulatory option in the NPRM and appears not to have been considered by the agencies, I encourage the agencies to do at least a cursory comparative analysis of this approach and to objectively consider its merits, and then to reevaluate the policy rational underlying NHTSA's selection of footprint as "the most appropriate attribute upon which to base the proposed standards". [OAR-2009-0472-7135.1, pp.4-5]

EPA Response:

Most of the comments summarized received on this issue support the use of footprint as the sole or at least one of the attributes upon which to base the fuel economy and GHG standards. Most of those disagreeing with the use of footprint support the substitution of vehicle weight for footprint for two primary reasons. One reason is harmonization with the fuel economy, fuel consumption, CO2, or GHG emission standards of other nations. The other is the fact that vehicle weight is a much better predictor of fuel economy and CO2 emissions than footprint. Starting with international harmonization, EPA agrees that the use of vehicle weight as the primary attribute upon which to base the final standards would result in standards that, in that respect, appear to be more closely harmonized with the standards of several nations, namely Europe, Japan, and China. However, we believe that the benefits of this harmonization could be minimal and in any event do not outweigh the detriments at this time. First, establishing a weight based standard in the U.S. would not guarantee that the same vehicles could or would be sold in all of the nations with weight based standards presently; indeed, there is little, if any, evidence that fuel consumption and GHG emissions standards in place in Europe, Japan, and China are leading to significantly more similar new vehicle fleets in those regions. Even if the standard curve were the same in two or more nations, the mix of vehicles sold would likely vary across national boundaries. Manufacturers comply with their applicable sales-weighted standard by balancing the number of vehicles sold which are above and below the standard (and the degree to which they are above and below the standard, of course). Setting the appropriate level of a fuel economy or GHG standard depends on many factors, including fleet mix and other regulations (*e.g.*, safety requirements, NO_X and PM emissions standards). Fleet mix varies widely across national boundaries, and some other regulations are not as stringent in other countries as in the United States. Thus, it may not be appropriate for all nations to set the same level of fuel economy or GHG emission standard. In fact, harmonization of fuel economy or CO2 standards internationally is most practically achieved when roughly the same level of fuel conserving and CO2 reducing technologies can be marketed internationally. The fact that many of technologies projected to be used to meet the final standards are already utilized

commercially in Europe and Japan is an indication of that the final standards are harmonized to some extent internationally. In addition, because the focus of EPA's standards are GHG emissions and not fuel consumption, manufacturers have the option (and are expected to take advantage) of generating credits through the use of high efficiency and low leak A/C systems, which are not presently incorporated into other nations' fuel conservation programs.

Second, as mentioned by several commenters, setting a weight-based GHG standard eliminates the incentive for manufacturers to use weight saving materials or techniques to reduce fuel consumption and CO2 emissions. As one commenter points out, fuel consumption and CO2 emissions are highly correlated with weight. As described in the Joint TSD, there are numerous ways that vehicle weight could be reduced in the future while maintaining vehicle safety and utility. A weight based standard would simply remove these techniques from consideration.

The fact that vehicle weight correlates much better than footprint with fuel consumption and CO2 emissions is, however, not the most relevant factor when selecting the attribute to use when developing the standard curve. In its 2002 report on the CAFE program, NAS recommended that NHTSA adopt weight-based standards in order to discourage manufacturers from responding to CAFE standards by reducing vehicle mass in ways that would compromise highway safety. However, NHTSA has concluded and EPA agrees that a size-based system not only more equitably distributes compliance burdens than a flat standard, but also that, compared to a weight-based system, a size-based system encourages high-strength lightweight materials and incurs less risk that energy and environmental benefits will be lost to "gaming" (it being much easier to increase a vehicle's mass than to increase its footprint).

In another comment, Cummins recommends that towing capacity be added as a secondary attribute to the proposed truck category, as greater towing capacity increases vehicle utility in a manner similar to greater footprint. Cummins suggests that such vehicles be granted a numerically higher CO2 standard than other trucks. We believe that towing capacity is already implicitly factored into the proposed (and final) car and truck curves. Towing capacity tends to be higher for trucks than for cars and trucks are in fact allowed to emit more CO2 than cars under the final standard. We also believe that larger trucks tend to have higher towing capacities than smaller trucks and again, larger trucks are allowed to emit more CO2 than smaller trucks. In other words, differences in towing capacity are part of the reason why the GHG standard curve increases with vehicle size and is higher for trucks than for cars. It is possible that EPA would consider adding additional attributes like towing capacity to its standard setting function in the future.

Several manufacturers make a similar suggestion for engine size or power. Vehicles with higher engine power tend to have higher CO2 emissions due to the fact that the engines operate at lower average loads over the two-cycle test procedure. Unlike passenger and cargo capacity, however, the societal benefit of higher engine power is less clear. The analysis supporting this rule assumes no change in the acceleration performance of

vehicles due to the rule (and the agencies' cost analysis includes the costs for preserving acceleration performance). In other words, we have included performance vehicles in our analysis and we have evaluated the various GHG reducing technologies in such a way to maintain acceleration performance as much as possible. We have explicitly excluded projecting increased sales of lower powered engines as a method of reducing CO2 emissions even in those cases where a manufacturer currently markets the same vehicle with two or more sized engines. However, to base the GHG standard on engine size or power would allow manufacturers to increase engine size or power with no compensating use of emission control technology to hold emissions constant. It is not clear that a vehicle fleet with higher acceleration performance would provide a societal benefit, particularly for vehicles whose performance is already well above the mean. However, although safety concerns support the adoption of a system that discourages downsizing as a compliance strategy, they do not support the adoption of a system that discourages reductions in the size and/or power of engines in performance vehicles. Porsche, for example, states that the purpose of their small sports cars is to provide performance, while that of other small vehicles is to provide fuel economy (and commensurately, low CO2 emissions). Porsche's argument fails to consider the fact that the express purpose of these fuel economy and GHG standards is to reduce fuel consumption and GHG emissions. Therefore, we do not believe that it would be appropriate to base the GHG standard using engine size or power as an explicit attribute. In fact, since it takes more power to move a larger vehicle, the use of footprint as the attribute upon which to base the GHG standard indirectly includes the impact of a larger engine on the GHG standard. However, this is done to enable the utility of the larger vehicle with larger passenger and cargo capacity. Porsche states that they would be required to be the most fuel efficient manufacturer in the U.S. due to their small average footprint. However, other manufacturers of small vehicles must achieve the same fuel efficiency. Porsche did not assert, nor establish that the proposed standards were more stringent for smaller footprint vehicles than for larger footprint vehicles. Thus, the fact that their overall average fuel efficiency would be required to be higher than other manufacturers does not mean that the proposed, nor final standards are more stringent for Porsche than for other manufacturers. (Note further that the final GHG rules contain an alternative standard for manufacturers with domestic sales of 2009 MY light duty vehicles of less than 50,000 allowing such manufacturers to select any combination of 2012 through 2015 MY light duty vehicles to meet the Temporary Lead Time Allowance alternative standard, up to a cumulative total of 200,000 vehicles. An additional 50,000 2016 MY vehicles may be included under this alternative as well. Section 86.1818-12 (e) (3). Porsche may choose this alternative (assuming it meets the various eligibility criteria in the rule) to obtain needed leadtime to ultimately meet the main CO2 standards for its fleet.)

BMW commented that there is evidence that the footprint-based standards are leading to increased sales of large trucks. We are not aware of such evidence. EPA's projection of future sales of large trucks and SUVs in the NPRM did show relatively large sales volumes. However, as discussed in the Joint TSD, this was due primarily to the mistaken inclusion of vehicles over 8,500 pounds GVWR which are not subject to the final standards. The design of the final footprint standards is intended to avoid incentives for manufacturers to increase or decrease the size of their vehicles.

BMW's safety related comments are addressed in section xx.

Comments concerning the flattening of the standard curves at low and high footprint values will be addressed in section 3.2.2 below.

3.2.2 Mathematical shape of the footprint-based standards

Organization: General Motors
Ford Motor Company
Honda Motor Company
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
University of Pennsylvania, Environmental Law Project
Recreational Vehicle Industry Association (RVIA)

Comment:

General Motors

The agencies "seek comment on the … methodology for apportioning the fleet stringencies to relative car and truck standards for 2012-2016." GM recommends: 1) modifying the slope of the truck curves such that large pickups have a lesser obligation, and 2) changing the large footprint "cut points" or "clips" from 66 ft^2 to 72 ft^2 to parallel the methodology applied to passenger cars (i.e. to affect only models with "extremely low sales volumes") The statistical application of an un-weighted mean absolute deviation places inappropriate and additional burden on large pickups and full line manufacturers. Using a sales-weighed least square regression (as shown below) more appropriately applies the overall industry goal across the entire fleet. [OAR-2009-0472-6953.1, p.27]

Further, the agencies propose "to "cut off" the linear portion of the passenger car function at 56 square feet" primarily because of "extremely low sales volumes" for passenger cars are larger than this footprint. This treatment of the data is equitable and appropriate; however the agencies discard this equitable approach in the treatment of larger trucks. In fact as shown in the table below (shown for 2016 MY but likewise applicable to all model years of the program), the agencies' arbitrary "cut point" for large trucks affects a much larger volume of the fleet. [OAR-2009-0472-6953.1, p.27]

To propose a specific solution to the curve fitting methodology, it is helpful to re-iterate the parameters that EPA uses to define the curve:

EPA mathematically defines the piecewise linear curves as follows:

Target = a, if $x \leq 1$

Target = cx + d, if $l < x \leq h$

Target = b, if $x > h$ I

in the constrained linear form applied by NHTSA, this equation takes the simplified form:

Target = MIN [MAX (c * x + d , a) , b]

Where:

Target = the CO_2 target value for a given footprint (in g/mi)

a = the minimum target value (in g/mi CO_2)

b = the maximum target value (in g/mi CO_2)

c = the slope of the linear function (in g/mi per sq ft CO_2)

d = is the intercept or zero-offset for the line (in g/mi CO_2)

x = footprint of the vehicle model (in square feet, rounded to the nearest tenth)

l & h are the lower and higher footprint limits or constraints or ("kinks") or the boundary between the flat regions and the intermediate sloped line (in sq ft)

Specifically, GM recommends: 1) Modifying the slope of the truck curves such that large pickups have a lesser obligation; specifically increase (in EPA metric of g/mi CO_2) "c" parameter 2) Changing the large footprint "cut points" or "clips" from 66 ft^2 to 72 ft^2 to parallel the methodology applied to passenger cars; specifically increase (in EPA metric of g/mi CO_2) the "b" parameter. [OAR-2009-0472-6953.1, p.28]

Ford Motor Company

Fitting the Curves

Ford recommends that the agencies use the same approach when setting the truck piecewise linear curve lower limit that was used for setting the car and truck upper limit and the car lower limit. For example, Ford agrees with the methodology used to establish the car upper limit that took into account the volume of vehicles (less than 10%) represented below a certain footprint and also the unique characteristics of those vehicles. The agencies state that the cars below a certain footprint have 'characteristics that could make it infeasible to achieve the very challenging targets that could apply in the absence of a constraint'. Further the agency noted the maximum value for passenger cars was determined based on extremely low volume sales of four luxury vehicles.

The agency noted that there is limited public information regarding the sales volumes of many different configurations (cab designs and bed sizes) of pickup trucks, most of the largest pickups (e.g., the Ford F-150, GM Sierra/Silverado, Nissan Titan, and Toyota Tundra) appear to fall just above 66 square feet in footprint. NHTSA is therefore proposing to 'cut off' the linear portion of the light truck function at 66 square feet. Ford disagrees with this assessment. Ford agrees with the Alliance assessment that a large volume of the trucks are between 68-72 square feet. This significant volume of trucks above the 66 square foot limit, makes this limit function more as a 'backstop.'

Ford strongly supports the Alliance recommendation for the agencies to move the lower limit for the truck piecewise linear curve to 72 square feet to recognize where the fleet is at today and avoid both market distortions and the GHG/CAFE backstop effect it could impose. Ford further recommends that the agencies use the same methodology applied to both the car upper and lower limit and the truck upper limit, which takes into account not only the volume of vehicles affected by the limit, but more importantly the unique characteristics (towing capacity and/or cargo hauling capability) of those vehicles that could make it infeasible to achieve the very challenging targets that would apply in the absence of the constraint adjustment. [OAR-2009-0472-7082.1, p. 4]

Honda Motor Company

Honda notes that the passenger car GHG and MPG attribute curve stringencies are capped for vehicles with footprints smaller than 41 square feet. The 41 square foot cap roughly aligns with the smallest 10% of the passenger car market. This cap will create the possibility that OEMs can offer consumers lower cost solutions to greenhouse gas reduction and higher fuel economy. In other words, as the stringency increases each year, the only solution for OEMs to meet these tougher standards is to increase the technology – and therefore the costs – that are applied to vehicles of the same footprint. Vehicles small enough to fit under the footprint cap will be able to meet the increased stringency simply by being small, and potentially less technology – and costs – need to be applied. Consumers who choose to downsize to these smaller vehicles can benefit from the lower greenhouse gas emissions and increased fuel economy of these vehicles while minimizing the cost impact. [NHTSA-2009-0059-0095.1, pp.5-6]

Honda strongly supports the creation of a similar cap for the truck GHG and MPG attribute curves. Currently the 41 square foot cap is applied to both passenger cars and trucks, however, the 41 square foot cap for trucks does not correspond to any current trucks on the market, so it is effectively meaningless. A similar cap for trucks would set the cap approximately where the smallest 10% of the truck fleet can be found. According to data from the 2011 MY CAFE NPRM, the smallest 10% of the truck fleet is found at approximately 46 square feet (see Attachment 1). Trucks provide consumers with increased functionality, and as such, not all consumers can downsize from trucks to cars. By enabling truck customers to downsize within the truck category, customer choice will be protected. [NHTSA-2009-0059-0095.1, p.6] [See [NHTSA-2009-0059-0095.1, p.14 for Attachment 1]]

Alliance of Automobile Manufacturers (Alliance)

Truck Clip

With vehicle size-based standards (i.e., footprint) based on a continuous curve, all models have a specific target fuel economy and CO2 emissions level. Larger vehicles receive a standard that reflects a fundamental of physics: that a larger vehicle requires more energy than a smaller one (with equivalent technology levels). 74 Fed. Reg. 49470. [OAR-2009-0472-6952.1, p. 30]

This scientific relationship holds true for a continuous footprint function until clips are imposed. A "clip" is defined as a region where the footprint-fuel economy (or CO2) relationship is replaced with a constant ("clipped") value for fuel economy (or CO2) regardless of footprint. [OAR-2009-0472-6952.1, p. 30]

The Alliance notes the high-side clip regions could force manufacturers to limit production of vehicles that are above the high-side clip or cause manufacturers who currently produce more vehicles above the high-side clip region to drastically change their products whereas other manufacturers would not be required to make such changes. Also, this option may deny customers the full range of vehicles that meet their needs within the clip region – this is especially true on the truck fleet. [OAR-2009-0472-6952.1, pp.30-31]

The high-side clip on the car fleet affects significantly less than 1% of the fleet but the high-side clip on the truck fleet is centered on the volume of the full size pickup trucks. [OAR-2009-0472-6952.1, p.31]

It appears EPA and NHTSA assumed that these full size pickup trucks were at or about 66 square feet, when in fact a large volume of them are at 68-72 square foot footprint. 74 Fed. Reg. 49,472. This significant volume of trucks above the clip, make this clip function more as a "backstop." [OAR-2009-0472-6952.1, p.31]

NHTSA cannot subject a vehicle to both a class standard and an overall standard. This is contrary to the legislative scheme of placing a vehicle is placed in a single compliance fleet, and contrary to NHTSA's past interpretations. During the time when NHTSA set 2WD and 4WD/AWD CAFE standards for light trucks, the "combined standard" was an option (i.e. an alternative to compliance with the class standard), and NOT an additional requirement. Subjecting manufacturers to a CAFE backstop would perpetuate the anticompetitive and antisafety consequences of the fleet average system that Congress abandoned with the passage of the Energy Independence and Security Act of 2007, Pub. L. 110-140 (EISA). [OAR-2009-0472-6952.1, p.31]

If the objective of the footprint system is to develop a regulatory framework that is superior to the non-attribute-based fleet average system, the high-side truck clip acts as a 'GHG/CAFE backstop' and simply places a new layer of regulations on top of the

footprint curve, creating more complexity for both manufacturers and the two agencies. [OAR-2009-0472-6952.1, p.31]

The Alliance recommends that the agencies move the high-side clip on the truck curve to 72 square feet to recognize where the fleet is at today and avoid both market distortions and the GHG/CAFE backstop effect it could impose. This would reflect a consistent approach with the methodology that the agencies employed in setting the passenger car high-slide clip. [OAR-2009-0472-6952.1, p.31]

Toyota Motor North America

Shape of Target Curves

The agencies requested comment on several aspects of the proposed target curves and the manner in which the curves were developed. [OAR-2009-0472-7291, p.11]

In general, Toyota supports the overall shape of the proposed target curves. In particular, the proposed car target curves represent an improvement over NHTSA's 2011 model year final rule car curve. In that rulemaking, the car curve adopted by NHTSA was quite 'steep' in the middle footprint ranges . The steepness of that curve had two possible negative effects. First, from a competitive standpoint, competing vehicles in the marketplace with slightly different footprints could have meaningfully different targets, which could provide an advantage for certain manufacturers in certain market segments. Second, a steep curve could provide an incentive to upsize a model in order to secure a relaxed target. [OAR-2009-0472-7291, pp.11-12]

The proposed car curves are 'flatter' than the 2011 model year curve as shown in Figure 5 below, particularly in the early model years. Note the figure shows the NHTSA car curves in MPG space, and compares the 2012 and 2016 model year slopes to the 2011 model year curve. Toyota supports this trend in flattening the car target curves. [OAR-2009-0472-7291, p.12]

With respect to the truck curves, the slope of the proposed curves is very similar to the 2011 model year truck curve adopted by NHTSA as shown in Figure 6. Again, the figure shows the NHTSA truck curves in MPG space, and compares the 2012 and 2016 model year slopes to the 2011 model year curve. Toyota supports the general continuation of this slope for the truck curves. [OAR-2009-0472-7291, p.12]

Another key aspect of the proposed target curves is the 'cut-off' (or clip) at footprints below 41 square feet and above 56 square feet for cars and above 66 square feet for trucks. A comparison of the final 2011 model year car and truck curves and the proposed 2012 and 2016MY curves is shown in Figures 7 and 8. While the constrained logistic function used for 2011 model year does not have a true clip from a mathematical viewpoint, the 2411 model year target curves for both cars and trucks largely flatten out to form effective clips at both ends of the curve. [OAR-2009-0472-7291, pp.12-13]

For smaller footprint vehicles, the current proposal extends the effective clip down to 41 square feet, requiring additional improvements in smaller cars and trucks . At the same time, maintaining some level of clip also ensures that the smallest and most fuel efficient vehicles are not unduly penalized by setting targets so high as to price these vehicles out of the most price-sensitive market segment. Toyota supports the clip at the smaller footprint range, and would not support eliminating the clip (requiring ever increasing target for smaller vehicles). For larger footprint vehicles, Toyota has no comment other than to recognize the current proposal clips both the car and truck curves at nearly the same footprint as the 2011 model year car and truck curves. [OAR-2009-0472-7291, p.13]

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy

A second issue concerns the shape of the fuel economy curves. The reason for using a curve instead of a single fuel economy target as in the original CAFÉ standards is to prevent excessive downsizing as a strategy for meeting fuel economy targets. However some downsizing is appropriate if it is done gradually. It makes little sense to structure the regulation to actively discourage downsizing. We recommend that the slope of the curve be made shallower over time. Making the slope flatter would raise the fuel economy standard at the 'backstop' of 56 square feet (or 66 square feet for light trucks). The flattening of the slope coincides with the consideration that new innovations will be developed between now and when the enforcements are enacted. [OAR-2009-0472-7188.1, p. 4]

It should be recognized that the stated purpose of the slope of the curve is to ensure that there would be 'no significant effect on the relative distribution of different vehicle sizes in the fleet, which means that consumers will still be able to purchase the size of vehicle that meets their needs'. The sloping curve allows for regulators to apply targets to vehicles of all sizes with relatively equal stringency. It is predicted that this equal distribution of stringency will result in relatively similar increases in vehicle efficiency in vehicles of all footprints, in order to prevent the proposed regulation from influencing consumer choice and market-driven forces. [OAR-2009-0472-7188.1, p. 4]

If the manufacturer succeeds in increasing a vehicle model's footprint while minimizing its decline in fuel economy, they may obtain emission credits that they would not have otherwise earned, undermining the regulation's core purpose. Since the slope of the curve currently does not change as it increases annually, this incentive will be present throughout the 2012-2016 period. [OAR-2009-0472-7188.1, p. 5]

Therefore, we recommend an incremental increase in stringency of the footprint curve which takes technology-forcing into account by gradually flattening the slope of the curve, possibly attaining a flat, fleet wide fuel economy target in the future. The flattening of the curve will pose a greater obstacle for larger, less fuel efficient cars to meet the proposed standards, and at the same time assure the anticipated market shift toward vehicles with smaller footprints, resulting in higher fuel economy. In addition to

efficiency innovations, this shift toward smaller, more fuel-efficient cars is a critical factor in making significant, tangible nation-wide reductions in vehicle greenhouse gas emissions. By meeting and exceeding more stringent curves, American manufacturers will place themselves at the forefront of the global technology frontier, thus helping to regain our role as an economic leader. [OAR-2009-0472-7188.1, p. 5]

Moreover, we recommend that the method with which the curves were drawn be made transparent in the support documentation. Any equations and formulae utilized to derive the curve should be made publicly available. We attempted to use the VOLPE model output data from NHTSA's website to reproduce the footprint curve, in order to assess the method with which the curve was drawn. According to the technical support document, the mean absolute deviation (MAD) regression was used to draw the slope between the maximum and the minimum footprints (41sq ft to 56 sq ft for passenger vehicles). However, we were unable to reproduce the maximum technology curve and, therefore, could not compare the MAD methodology to alternative regressions. [OAR-2009-0472-7188.1, p. 5]

Despite direct communication with NHTSA, we were unable to clarify these questions and replicate the exact slope and intercept given in the VOLPE model output. According to testimony at the Los Angeles hearings, the Environmental Defense Fund similarly had difficulty replicating the NHTSA analysis. This is a crucial piece of information, as the curve is the central tool with which the fuel economy targets are assigned. If the method is made transparent, then commentators could also make better informed recommendations to the proposal. [OAR-2009-0472-7188.1, p. 5]

University of Pennsylvania, Environmental Law Project

While it is important that the regulation avoid providing perverse incentives to vehicle manufacturers, predictability and gradualness are also important features of the regulation. These features ensure that the cost of compliance will be relatively low, as auto manufacturers are given time to incorporate improvements into the standard design timeline. Thus, we recommend that the regulation gradually reduce the disparity between the efficiency requirements for larger and smaller vehicles such that it is significantly reduced between model years 2012 and 2016. This reduction would take the form of a decreasing slope in the standard curves between 2012 and 2016, as well as a decrease in the difference between the height of the car and truck curves. [OAR-2009-0472-7286.1, pp. 17-18]

Recreational Vehicle Industry Association (RVIA)

The NPRM proposes fuel economy/CO2 target curves for light trucks which flatten out at the 66 square feet footprint value. It is our understanding, however, that there are light-duty vehicle tow vehicles currently in the marketplace which have a volume [sic: footprint] in the range of 68 to 72 square feet. In flattening out the curve at 66 square feet, vehicles up to 72 square feet footprint range will be expected to achieve the same fuel efficiency as vehicles having a footprint of 66 square feet. We urge EPA and NHTSA to

correct this oversight and adjust the target curves so that these larger vehicles, especially since they are used for towing, are not penalized by the standards. Failing to do so risks manufacturers downsizing these tow vehicles or eliminating them altogether from the product mix. Either of these actions will be detrimental to highway safety and to the RV industry and individual who tow RVs. [NHTSA-2009-0059-0107, p.5]

EPA Response:

There are several key aspects to the mathematical form of the footprint-based standards which were commented upon. These were: 1) the statistical methods used to develop the slope of the car and truck curves, including the resultant slopes of these curves, and 2) the lower and upper footprint values where the curves flatten out. We address each of these aspects below.

The slopes of the footprint-based standard curves in the NPRM were based on a minimization of the sum of the absolute differences between the individual vehicle data points and the curve, often referred to as minimum mean absolute deviation or MMAD. Each vehicle's data point was assigned the same "weight" in this summation. The primary alternatives to this technique would be to 1) use least-square regression and 2) sales-weight each vehicle's data point. GM, for example, recommended that both alternatives be used in lieu of the non-sales weighted MMAD regression.

The MMAD regression technique differs from least square regression primarily in that it reduces the influence of data points which deviate the most from the curve. Least square regression by definition squares this deviation before summing, while MMAD simply adds the deviation to the sum of differences. Examination of the vehicle data used to develop the curves indicates that the fuel consumption and CO2 emission levels of individual vehicles having similar footprints vary widely, often by as much as 50%. This extreme variation can indicate the absence of a normally distributed dataset, often indicating the need to use a statistical technique that reduces the influence of outlying data points.[1]

With respect to recommendations that NHTSA and EPA use weighted least-squares analysis, the agencies find that the market forecast used for analysis supporting both the NPRM and the final rule exhibits the two key characteristics that previously led NHTSA

[1] In the case of a dataset not drawn from a sample with a Gaussian, or normal, distribution, there is often a need to employ robust estimation methods rather than rely on least-squares approach to curve fitting. The least-squares approach has as an underlying assumption that the data are drawn from a normal distribution, and hence fits a curve using a sum-of-squares method to minimize errors. This approach will, in a sample drawn from a non-normal distribution, give excessive weight to outliers by making their presence felt in proportion to the square of their distance from the fitted curve, and, hence, distort the resulting fit. With outliers in the sample, the typical solution is to use a robust method such as a minimum absolute deviation, rather than a squared term, to estimate the fit (*see, e.g.*, ''AI Access: Your Access to Data Modeling,'' at http://www.aiaccess.net/English/Glossaries/GlosMod/e_gm_O_Pa.htm#Outlier). The effect on the estimation is to let the presence of each observation be felt more uniformly, resulting in a curve more representative of the data (*see, e.g.*, Peter Kennedy, *A Guide to Econometrics*, 3rd edition, 1992, MIT Press, Cambridge, MA).

to use minimization of the unweighted rather than sales-weighted analysis. The agencies' intention is to fit a curve that describes a technical relationship between fuel economy and footprint, given comparable levels of technology, and this supports weighting discrete vehicle models equally. However, there are some aspects of vehicle design which are known to influence fuel consumption and CO2 emissions, such as acceleration performance and amenities which can increase vehicle weight. To the extent that the distribution of these preferences is not equally distributed across the range of footprint values, vehicles with relatively extreme attributes and low sales levels.

In conducting analysis to support its rulemaking for MY2011 CAFE standards, NHTSA evaluated several combinations of these two aspects of the curve setting techniques. Most combinations yielded slopes for the car curve that were believed to give manufacturers too great an incentive to upsize their vehicles. In other words, the change in allowed fuel consumption or CO2 emissions with an increase in size was deemed to be greater than that which would inherently result from a larger vehicle platform, as supported by Toyota. This belief was despite the fact that the slopes of these curves reflected the change in fuel consumption or CO2 emissions with a change in vehicle footprint. Considering this, and considering the technical issues discussed above, NHTSA selected techniques that yielded a car curve with what it believed to be an acceptable slope. NHTSA and EPA have continued to apply those techniques in connection with the final rule, though with a constrained linear curve as opposed to a constrained logistic curve, which in part resulted in a car curve slope lower than that in the middle of the 2011 MY constrained logistic curve.

This choice of statistical techniques also yielded a slightly lower slope for the truck curve than several other combinations of the available statistical techniques. A lower truck slope increases the stringency of the standard for larger trucks relative to smaller trucks. This appears to be GM's concern, as GM's truck sales are oriented towards the larger truck segment of the market. GM's suggestion to use sales weighted least square regression is not supported by any additional information beyond that provided by the two agencies in the proposed rule. GM and Ford did challenge the two agencies' projections that their larger trucks could meet the proposed standards. These comments are addressed in section 4.6 of this RTC document. GM did not address the issue of the increased slope for cars, which would accompany their recommended statistical technique. Overall, the two agencies continue to believe that the use of unweighted MMAD regression produces the best results for this dataset and that no arguments exist which clearly indicate that this approach should be rejected. Thus, the two agencies fitted the car and truck curves using the same statistical techniques as those used in the NPRM. It is possible that EPA would reconsider the statistical techniques used to develop the standard curves in future rulemaking based on differences in the projected characteristics of future vehicle designs and sales.

Regarding the lower and upper footprint values where the standard curves flatten out, GM recommends that the upper footprint value for trucks be increased to 72 square feet from 66 square feet. Their argument is based on the fact that the upper footprint value for

cars of 56 square feet affects very few sales. Thus, the upper footprint value for trucks should do the same.

This argument does not address the interaction between the car and truck curves and how they together regulate the light vehicle fleet. For example, the lower limit of the car curve was set at 41 square feet. Roughly 10% of car sales fall below this level. Were the lower limit of the truck curve to be set at footprint value where 10% of truck sales fell below its value, the lower limit of the truck curve would have been well above 41 square feet. The truck curve is already well above the car curve in terms of fuel consumption or CO2 emissions at lower footprint values. If the truck curve were to flatten out at a footprint value of, for example, 46 square feet as suggested by Honda, the difference between the two curves would become even greater for vehicles below 46 square feet. The incentive to convert cars with footprints below 46 square feet to trucks would have been extremely large. Thus, even though few current trucks are sold with footprints below 41 square feet, protecting the overall goal of the two programs makes it clear that the lower footprint limit of the truck curve should be the same as or very similar to that for the car curve. Thus, Honda's comment that the 41 square foot cutpoint for the truck curve is meaningless is not correct.

Since trucks tend to have larger footprints than cars, it makes similar sense to set the upper limit of the truck curve in the same way as the lower limit of the car curve (i.e., at the point where roughly 10% of sales exceed the limit). This is roughly 66 square feet. Analogous to the setting of the lower limit of the truck curve at the same level as the lower limit of the car curve, we could have set the upper limit of the car curve at 66 square feet. However, there are very few car sales above 56 square feet, so the point is essentially moot as to setting the upper limit of the car curve at 56 or 66 square feet. GM's arguments starts by setting of the upper limit of the car curve and then setting that of truck curve to the same level. This is incorrect from a policy perspective. The lower limit of the two curves is set based on that vehicle class with the smaller vehicles (i.e., cars) and the upper limit of the curves is set based on that vehicle class with the larger vehicles (i.e., trucks).

While GM, Ford and AAM assert that a large volume of truck sales exist with footprints between 68 and 72 square feet, detailed data supporting this claim, which could have been incorporated into the two agencies' analyses, were not provided. As discussed in section 3.4 of this RTC document, there is value from a policy perspective for a backstop which increases the likelihood that the projected benefits of these rules actually occurs. Thus, the fact that the upper limit on the truck curve serves to a small degree as an indirect backstop on fuel consumption and CO2 emissions is not in itself a problem. We also note that most vehicles which are marketed as "low-priced" or "economical" are very small in size. This implies that sales of these vehicles would be the most sensitive to increases in cost due to the addition of fuel saving technology. Trucks above 66 square feet in footprint do not fall into this category. In contrast, these vehicles are typically on the high end of the market in many respects and should be in a good position to absorb the cost of the technologies which the agencies project will enable their compliance.

Toyota suggests reducing the slopes of the car and truck curves over time to encourage a gradual downsizing of both the car and truck fleets. Such downsizing would clearly reduce fleet fuel consumption and CO2 emissions, the two main goals of these rules. The two agencies did not decide to do this at the present time for several reasons. One was leadtime, as the latest standard being set (i.e., 2016) was only 6 model years out. Another was the fact that reliable consumer choice models for new vehicle purchase are still under development. We were not able to confidently predict the impact of such a flattening of the standard curves at this time. This meant that it would have been possible to over-do the flattening and perturb the desirability of larger vehicle to a greater degree than desired. The two agencies remain open to such a policy when setting standards beyond MY 2016.

Since the fitted slopes of the two curves were based on vehicle data which reflected the use of all available technologies other than diesel and strong hybridization, we do not believe that there is an inappropriate incentive for manufacturers to upsize their vehicles in order to reduce the need to add fuel saving and CO2 reducing technology.

As described in section II.C of the preamble to the final rule, NHTSA did correct several errors in its analysis used to fit the slopes of the curves, allowing the commenters to reproduce the results. The refitted passenger car curve is similar to that presented in the NPRM, and the refitted light truck curve is nearly identical to the corresponding curve in the NPRM. However, the slope of the refitted passenger car curve is about 27 percent steeper (on a gram per mile per square foot basis) than the curve presented in the NPRM, and would increase stringency for the smallest cars, decrease stringency for the largest cars, and provide a greater incentive to increase vehicle size throughout the range of footprints within which NHTSA and EPA project most passenger car models will be sold through MY 2016. The agencies are concerned that these changes would make it unduly difficult for manufacturers to introduce new small passenger cars in the United States, and unduly risk losses in feasible and cost-effective energy and environmental benefits by increasing incentives for the passenger car market to shift toward larger vehicles.

Considering NHTSA's and EPA's concerns regarding the change in incentives that would result from a refitted curve for passenger cars, the agencies are finalizing CAFE and GHG standards based on the curves presented in the NPRM.

3.2.3 Relative stringency of the car and truck standards

Organization: General Motors
Northeast States for Coordinated Air Use Management
International Council on Clean Transportation
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
University of Pennsylvania, Environmental Law Project
South Coast Air Quality Management District

Comment:

General Motors

The overall industry goal of 250 CO_2 g/mile (35.5 mpg equivalent) by 2016 model year is tough, but reasonable. This target can, however, be distributed between the separate car and truck fleets in an infinite number of combinations. In our comments, we provide an analysis for adjusting the proposed distribution to achieve a more equitable burden on the truck fleet. Our analysis shows that today's most efficient, segment leading cars and small trucks already meet the 2016 model year targets, but the segment leading and most efficient large pickups are required to improve by 20% to meet their 2016 MY requirements. Our analysis shows that over estimated benefits of added fuel economy technology and future pickup truck volumes result in a disproportionate burden being placed upon large pickups. GM recommends that in each year of the rule, the agencies better balance the respective obligations of passenger cars and trucks – while still reaching the same end point for the car and truck fleets combined in 2016. [OAR-2009-0472-6953.1, p.2]

GM recommends that in each year of the rule, the agencies better balance the obligation for large pickups as compared to passenger vehicles. Today's most efficient, segment leading cars and small trucks already meet the 2016 model year targets but the segment leading, most efficient large pickups are required to improve by 20% to meet their 2016 MY requirements. [OAR-2009-0472-6953.1, p.4] [[See pp.4-8 of OAR-2009-0472-6953.1 for a discussion on GM's analysis of the truck efficiencies]]

Northeast States for Coordinated Air Use Management

Separate footprint curves for cars and light trucks: NESCAUM encourages EPA and DOT to maintain a single footprint curve for cars and light trucks in the final regulation. By establishing two curves as EPA and DOT have proposed, there is a significant risk that automobile manufacturers will "game" the standard. This can be done, for example, by making four wheel drive small SUVs rather than two wheel drive small SUVs so that cars become classified as trucks. If manufacturers reclassify cars as light trucks as has happened before, GHG emissions and fuel consumption could increase significantly. [OAR-2009-0472-7235.1, p.4]

[Northeast States for Coordinated Air Use Management also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, p. 43.]

International Council on Clean Transportation

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 59.]]

We also support the proposed change to the shape of the footprint adjustments. Target standards versus the vehicle footprint provide consistent signals to improve efficiency for most vehicles while preserving incentives to make the largest vehicles smaller.

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 61-62.]]

First, the proposed rule maintains separate footprint curves for cars and light trucks. This subjects light trucks with the same footprint to much less stringent standards and gives manufacturers a tremendous incentive to reclassify cars as light trucks. In the past this has brought us such notable trucks as the Subaru Outback, Chrysler P.T. Cruiser, Dodge Magnum, Mazda 5, Porsche and BMW X6, BMW describes as a sports activity coupe.

In the future it is likely to cause manufacturers to drop many 2-wheel drive versions of their small sport utilities and make less efficient 4-wheel drive versions standard so that they can be classified as light trucks instead of cars. Each car to light truck sales shift results in easier compliance for manufacturers but higher in use fuel consumption and greenhouse gas emissions in use.

EPA recognized the importance of this issue when it established a single tier 2 emissions standard that applied to all cars and light trucks. It is time to do the same for fuel efficiency and greenhouse gas emissions and end this artificial distinction. A single footprint function will still give larger trucks a less stringent target while avoiding vehicle classification games.

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy

While the proposed rule itself will not alter fleet composition, the EPA and NHTSA have projected a market-driven shift from the current mix of vehicles (51% passenger cars, 49% light trucks) towards a vehicle mix of 67% passenger cars and 33% light trucks by 2016. However, the market simply may not respond in the manner projected in the proposal, or the shift may not occur with market power alone. The Union of Concerned Scientists contend that vehicles slated to be reclassified as passenger vehicles (e.g. 2-wheel drive SUVs) could be equipped with other light truck attributes to qualify for light truck classification. As long as there is a separate, less stringent footprint-curve for light trucks, there will be a strong incentive on the part of auto-makers to classify their vehicles as light trucks. While the curve evenly distributes the penalties, it also rewards vehicles with larger footprints, which inherently tend to have a lower fuel economy. Not only does the footprint-based curve discourage downsizing of vehicles, it introduces incentives for manufacturers to maximize the footprint for a given model, so that a model will have a less stringent target fuel economy. This may include shifting the wheelbase to a wider, boxy shape, or elongating the vehicle. [OAR-2009-0472-7188.1, p. 4]

University of Pennsylvania, Environmental Law Project

While it is important that the regulation avoid providing perverse incentives to vehicle manufacturers, predictability and gradualness are also important features of the regulation. These features ensure that the cost of compliance will be relatively low, as auto manufacturers are given time to incorporate improvements into the standard design timeline. Thus, we recommend that the regulation gradually reduce the disparity between

the efficiency requirements for larger and smaller vehicles such that it is significantly reduced between model years 2012 and 2016. This reduction would take the form of a decreasing slope in the standard curves between 2012 and 2016, as well as a decrease in the difference between the height of the car and truck curves. [OAR-2009-0472-7286.1, pp. 17-18]

South Coast Air Quality Management District

Third, the South Coast AQMD staff shares the concern that the attribute basis of the EPA program may provide certain incentives to up-weight vehicles.

For example, the EPA's program may result in auto manufacturer compliance strategies which involve up-weighting of vehicles from two-wheel drive to four-wheel drive SUV configurations. For this reason, the South Coast AQMD staff recommend that EPA consider establishing some form of backstop mechanism to ensure that the vehicle fleet is not dramatically distorted by perverse incentives occurring by selecting different vehicle weight categories.

In conclusion, the AQMD staff certainly appreciate this opportunity to provide comment. We compliment the EPA and NHTSA and DOT staffs for their diligent analysis. The standards proposed by both of your organizations will significantly reduce greenhouse gas emissions as well as criteria pollutants. We are very pleased to stand here and strongly endorse the standards as they will provide meaningful national benefits for decades to come.

[Comments are from LA Testimony, OAR-2009-0472-7283, pp.59-67]

EPA Response:

GM's basic comment that the burden of the standards can be more equitably distributed between cars and trucks is a function of three aspects of the car and truck standard curves: 1) their relative slopes, 2) their relative intercepts at zero footprint (ignoring their flattening at a footprint value of 41 square feet), and 3) the lower and upper footprint values where the curves flatten out (and for GM, their primary focus is the 66 square foot cutpoint for the truck curve). The issues of the relative slopes of the car and truck curves and the lower and upper footprint cutpoints were addressed is section 3.2.2 above. The remaining issue to be addressed here is how the two agencies set the intercepts of the two curves, or in other words, the degree to which the truck curve was above the car curve in terms of fuel consumption and CO2 emissions.

This distance between the car and truck curves was based on setting each curve at the level where estimated net societal benefits were maximized. These two curves were then adjusted upwards (in terms of fuel consumption or CO2 emissions) to the point where the desired fleet-average fuel consumption or CO2 targets were achieved. Thus, this analysis reflects the cost of adding technology to both cars and trucks, smaller and larger vehicles, as well as the benefits accruing from this technology. GM has not shown why this

approach produces a greater burden on large trucks versus smaller cars. Simply comparing current vehicles, even "market leading" vehicles, to the proposed standards does not establish the capability of adding additional, cost beneficial technology. Current market forces, including forces in overseas markets for some manufacturers, can lead to the uneven addition of technology to current vehicles. Without assessing the degree to which available technology has already been added to current vehicles, any such comparison can be misleading. We believe that the approach of adding all cost beneficial technology to all vehicles provides a reasonable balance of regulatory burden across the wide variety of vehicles currently being sold in the U.S. market.

Regarding NESCAUM's suggestion for a single curve for both cars and light trucks and other comments indicating a risk that manufacturers will shift car sales to trucks, we believe that there are several reasons to reject this approach for the present rule. As discussed above in section 3.0, it may be difficult under current legislation for NHTSA to utilize a single attribute curve to regulate fuel economy of both cars and trucks. Also, some trucks, at least, provide utility not available from cars. These include cargo and towing capacity. The vehicle features required to provide this utility inherently increase fuel consumption and CO2 emissions relative to vehicles without such utility. Therefore, some distinction between car and truck standards appears justifiable. As also discussed in section 3.0 above, we acknowledge that there is some risk that manufacturers will increase the sale of AWD and 4WD versions of their smaller SUVs relative to 2WD versions of these vehicles, thereby leading to increased levels of fleetwide fuel consumption and CO2 emissions. As indicated above, we will monitor this situation and take necessary action as we develop standards for 2017 and beyond. At the present time, a shift from the historical approach of setting separate standards for cars and trucks to one that would tgreat them the same or much more similarly would lead to a large differential regulatory impact on several manufacturers. The current state of the auto industry and the fact that the time frame of these rules only extends 6 years from today argue against such a dramatic change at this time.

3.3 Stringency of the standards

Organization: General Motors
Northeast States for Coordinated Air Use Management
Public Citizen and Safe Climate Campaign
American Council for an Energy Efficient Economy
Sierra Club
California Air Resources Board
International Council on Clean Transportation
US Steel Corporation
University of Pennsylvania, Environmental Law Project
Eadie, R. Frank
Sack, Emily

Comment:

General Motors

The overall industry goal of 250 CO_2 g/mile (35.5 mpg equivalent) by 2016 model year is tough, but reasonable. [OAR-2009-0472-6953, p.2]

The proposed standards are not easy, nor will they be inexpensive, but we are up to the challenge. The success of our current offerings in the marketplace like the Chevy Malibu and the Equinox and the enthusiasm over soon-to-be released products like the Chevy Cruze convince us that we will be able to do our part, and even before this rule becomes effective, we will have introduced the Chevy Volt, which is scheduled to start production in late 2010 as a 2011 model year vehicle, and it will be GM's first extended range electric vehicle. [OAR-2009-0472-6185, p.11]

Public Citizens and Safe Climate Campaign

The agencies have not outlined an approach to setting standards that sets a precedent for how the agencies would approach this task the next time around. The agencies have engaged in economic hand waving, estimating that more stringent standards would be cost-effective, but then appealing to the financial state of the auto industry in choosing the level of standards. For example, EPA discusses other rates at which to ramp down the CO2 standards, looking at two options: lowering allowable CO2 emissions by four percent per year and six percent per year. These options are not indicated by any technological or economic criteria, but merely establish a range within which the agency's proposal fails. EPA proposes that CO2 emissions decline at approximately 4.2 percent per year for passenger cars and 4.5 percent per year for light trucks. [OAR-2009-0472-7050.1, p.9]

EPA then discusses the relative cost of compliance with standards in each scenario, and explains that the cost savings for setting standards at four percent instead of the proposed level would be $73 per vehicle, whereas the six percent alternative would incur additional costs of $493 per vehicle on average. EPA appeals to the financial state of the industry in influencing its decision: "EPA is not concluding that the 6% per year alternative standards are technologically infeasible, but EPA believes such standards for this time frame would be overly stringent given the significant strain it would place on the resources of the industry under current conditions. EPA believes this degree of stringency is not warranted at this time. Therefore EPA does not believe the 6% per year alternative would be an appropriate balance of various relevant factors for model years 2012–2016." EPA does not substantiate this claim with an analysis that evaluates the tradeoff in terms of public health and welfare. [OAR-2009-0472-7050.1, p.9]

Science dictates that to avoid the worst consequences of global warming that we must reduce emissions of greenhouse gases to 83 percent below 1990 levels by 2050. In order for the U.S. light duty transportation sector to get there, EPA must set standards that cross multiple product cycles and allow for much more significant transformative changes in the light duty vehicle fleet. The CAA requires EPA to issue standards that protect public health and welfare. The Supreme Court in Massachusetts v. EPA affirmed CAA authority

to regulate greenhouse gases, and EPA has asserted that greenhouse gases pose a threat to public health and welfare through its proposed endangerment finding. The agency's approach to setting standards must reflect its responsibility to set protective standards consistent with its statutory mandate. [OAR-2009-0472-7050.1, p.9]

EPA's consideration of health and the environment are paramount to economic considerations in setting standards under CAA. NHTSA has significant discretion to balance the four factors under EPCA for setting standards, and could choose technological feasibility and the need of the nation to conserve energy as the paramount factors in standard setting. The agency's assessment of the industry's capacity and willingness to raise fuel economy and cut greenhouse gas emissions does not reflect current trends. Consumer demand for fuel efficient cars has increased significantly in light of gas price spikes in 2005 and 2008, and increased public awareness of global warming. Major automakers have been making announcements for over a year about ambitious plans to raise vehicle fuel economy, roll out new efficiency technology, and move more rapidly than expected into hybrid, plug-in hybrid, and fully electric vehicles. Both agencies' assumptions about technology adoption and willingness to increase fleet fuel economy seem unjustifiably constrained by outdated assumptions. [OAR-2009-0472-7050.1, p.10]

In establishing this new program, the agencies should develop a standard-setting methodology that satisfies each agency's statutory requirements, as well as the intent of both laws. EPCA aims to stabilize energy prices through conservation efforts. It was passed to establish a national energy policy that protects consumers against future price shocks and puts the nation in a more competitive position globally by making the nation less sensitive to price volatility. This vision was undermined by inconsistency in standard setting, and when oil prices rose sharply in 2005 and 2008, consumers were subject to prices shocks similar to those experienced in the 1970s. EPA has a responsibility to protect public health and welfare by setting standards under the CAA. The threat of global warming is clearer today than previously, and the agency's authority to regulate greenhouse gas emissions to fulfill its mission of protecting public health and welfare has been affirmed. [OAR-2009-0472-7050.1, p.10]

Both agencies should start the standard setting process by establishing oil savings and greenhouse gas reduction goals based on assessments of national needs. From these estimates, the agencies must then apply considerations appropriate to their respective statutes, including technological feasibility, economic considerations, and the needs of the nation to conserve oil and reduce greenhouse gas emissions. This would result in setting levels of stringency consistent with the needs of the nation that are the maximum feasible, as required by EPCA, and that are as technology-forcing as practicable, consistent with EPA's charge to place public health and welfare above economic concerns. [OAR-2009-0472-7050.1, p.11]

American Council for an Energy Efficient Economy

Recommendations:

Establish in the final rule that light-duty vehicle standards in subsequent rules shall be set to achieve medium- and long-term emissions goals for the transportation sector commensurate with the need for emissions reductions overall.

Ensure that required emissions levels are sufficiently stringent to ensure that, at a minimum, any incremental reductions with positive net benefits are implemented.

The stringency of the proposed rule is well below the maximum cost-effective level, as the agencies clearly demonstrate. Table IV.F.2 (p.49700) shows that the proposed standards would save 62 billion gallons per year, while a more stringent standard that maximizes net benefit would save 90 billion gallons, or almost 50 percent more fuel (and CO2 emissions). Choosing one level of standards over another that is superior on both environmental and economic grounds is a decision that calls for a clear explanation. The agencies' rationale for doing so is not compelling, however.

In Section III.D., EPA compares the manufacturers' likely response to the proposed standards to what would be required to achieve a 4 percent per year reduction in CO2 (slightly less stringent than the standards) and to achieve a 6 percent per year reduction (substantially more than the standards). EPA notes that, according to its model, the requisite application of advanced technologies to achieve 6 percent reductions would increase fleetwide, necessitating for example an 8 percent increase in the application of start-stop technology. Furthermore, for BMW and Daimler, for example, increases of up to 42 percent in hybrid production could be necessary to meet the standard. (p.49557) These observations do not support the view that a 6 percent per year rate is too ambitious. Moreover, the concern over BMW and Daimler is reminiscent of NHTSA earlier, ill-advised "least-capable manufacturer" approach (to nonattribute- based standards), except that EPA has cited manufacturers less likely to elicit sympathy than those to which NHTSA applied its approach.

EPA goes on to state that as the annual percent reduction increases from 4 to 6 percent, "[c]ompliance costs are entering the region of non-linearity. The $73 cost savings of the 4 percent per year standards relative to the proposal represents $18 per g/mi CO2 increase. The $493 cost increase of the 6 percent per year standards relative to the proposal represents $25 per g/mi CO2 increase." (p.49557) It is not clear why EPA regards this increase in cost-per-ton as dramatic and excessive. EPA also fails to discuss whether a CO2 reduction rate of 5 percent per year, for example, would be feasible. EPA proposes no objective measure of what is sufficiently stringent. Indeed, NHTSA's subsequent discussion of the various rates of improvement the agencies considered indicates that even a 6 percent rate of improvement is well below the optimal rate, even from a purely economic perspective, without prioritization of environmental goals.

NHTSA presents stringency options in the form of annual percent increases in fuel economy, with the proposed standards corresponding to a 4.3 percent per year increase. In IV.F., NHTSA argues that 5 percent would be too aggressive, because it would increases the per vehicle incremental cost by 30 percent while reducing fuel consumption by only 3 percent (p. 49704). This comparison in fact provides no basis for comparison

between the proposed standard and a 5 percent annual reduction, and certainly does not demonstrate that the higher rate of reduction is excessively costly. If several very low-cost technologies exist to reduce fuel consumption, the next technologies on the cost curve might cost many times more per gallon saved while still being highly cost-effective.

The ad hoc and narrow arguments advanced by the agencies to show that standards more stringent than those proposed would not be reasonable are for the most part unconvincing, especially given that the proposed standards are far below the level that maximizes net benefits. The perilous condition of the domestic auto industry may in fact imply that the proposed standards are the best choice for the current rulemaking. However, the reasons for this must be clearly articulated and formulated in a way that makes clear how "maximum feasible" levels are to be determined in the future. The inadequate explanation for the stringency of the proposed rule could have negative implications for subsequent rulemakings.

The governing statutes grant the agencies substantial discretion in setting stringency, and ACEEE does not support the application of a rigid economic test to determine the appropriate levels of the standards. However, recommending a standards even below the maximum net benefit in economic terms calls for a special explanation. A standard that falls below the point on the technology cost curve where marginal costs equal marginal benefits would be widely acknowledged to fall short of the "maximum feasible" and "economically practicable" standard required under the CAFE statute. Under the Clean Air Act, for which economic considerations are secondary to environmental protection needs, the appropriate standard can only be more stringent. Maximum net benefits should therefore be considered a lower bound for stringency of the standards.

The final rule should set out the principles by which stringencies will be determined in future rulemakings in order to ensure that standards will continue to support expeditious reduction of fuel use and greenhouse emissions. The ability of the standards to promote the development and deployment of new efficiency technologies is central to their role in national climate and energy security policy, so EPA and NHTSA should make clear how this aspect of the program will be preserved and strengthened over time.

Given that the purpose of the EPA rule is to help achieve the reductions in GHG emissions necessary to reach sustainable atmospheric concentrations of carbon, those emissions reduction goals should inform the setting of standards in a quantitative way. This general approach was introduced in EPA's GHG NPRM in 2008 and begins with certain assumptions about the percent reduction in GHG emissions, relative to 2005 levels, required in milestone years out to 2050. A default assumption that sectors and subsectors must reduce emissions in proportion to their contribution to total emissions is appropriate, at least until the potential for some sectors to do more is verified.

In such an approach, aggressive measures will be needed for the transportation sector, going well beyond the standards proposed in the rule, to achieve the sector's share of the

necessary reductions. Therefore, ACEEE believes that GHG reduction targets should be the principal determinant of the stringency of vehicle emissions rules in the future.

[ACEEE also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 139, 144-146.]

Sierra Club

The proposed National Program combines the first national greenhouse gas standards for vehicles under the Clean Air Act with energy saving Corporate Average Fuel Economy (CAFE) standards, all while ensuring the nation benefits from the precedent set by California's Pavley standards. The proposed National Program is expected reduce greenhouse gas emissions by 950 million metric tons, equivalent of 205 coal plants shutting for one year, and reduce oil consumption by 1.8 billion barrels, resulting in consumer savings at the pump of $193 billion. These standards must ensure the nation benefits from the precedent set by California's Pavley standards to achieve a 30% reduction in greenhouse gas pollution from new vehicles in 2016. A strong final rule is needed to deliver on President Obama's promise and to pull vehicle standards out of the 1970s and into the 21st century. [OAR-2009-0472-7278.1, p.2]

This NPRM includes many elements that are identified as transitional – as both agencies work to create a new National Program for greenhouse gas and fuel economy standards. While the 250 g/mi CO2e standard in the NPRM is significant, we urge that both agencies definitively end "transitional" elements in 2016 and indicate an intent to launch a standard setting process for 2017 and beyond that will meet the urgent need of the United States to dramatically reduce greenhouse gas pollution and conserve oil and [OAR-2009-0472-7278.1, p.2] meet the growing demand of American consumers for vehicles that go farther on a gallon of gas. [OAR-2009-0472-7278.1, p.3]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 30-31.]]

EPA and NHTSA should clarify the approach to setting standards. As we know, the proposed standards of 250 g/mi and 34.1 mpg are the result of an agreement; however, future rounds of standards will likely not be bound by a similar agreement and, in fact, both agencies should ensure that future standards maximize the application of cost-effective technologies to vehicles and consumer savings at the pump. The Clean Air Act is a technology forcing statute, and we urge EPA to clearly note the transitional aspect of these standards in the final rule.

These standards will move us from one standard aimed at reducing oil consumption, to a broader National Program that also guarantees greenhouse gas emissions reductions. The proposed National Program sets the table for future standards that can finally break our dependence on oil and create substantially cleaner vehicles.

California Air Resources Board

First, the Final Rule needs to maintain the proposed standards' stringency in each model year 2012 through 2016. It appears that a principal industry trade group has proposed reducing the stringency of the proposed fuel economy standards for model year 2012-1015, arguing that, as currently proposed the standards do not meet EISA's requirement for the standards to increase "ratably." See Alliance of Automobile Manufacturers (Alliance) Document ID EPA-HQ-OAR-2009-0472-6952.1. CARB strongly opposes the Alliance proposal.

California committed to adopt the national program for model years 2012-2016 with the understanding that it would provide equivalent or better overall greenhouse gas reductions nationwide than California's own program coupled with its adopting sister states; the Alliance proposal threatens that equation. First, the proposed fuel economy and greenhouse gas requirements were designed to establish a national program with a consistent and harmonized approach that would reduce greenhouse gas emissions and improve fuel economy from light-duty vehicles. Because the Alliance is also recommending that EPA's GHG standards be simultaneously stepped, the greenhouse gas reductions projected for the national program would be significantly reduced. Second, the proposed fuel economy and greenhouse gas requirements were established after a joint effort by both agencies to determine standards that were technically feasible and cost-effective in the timeframe proposed. We do not believe that a case has been made to refute the agencies' analyses. These and other Alliance recommendations need careful review to ensure that they do not reduce the stringency and consequent cumulative greenhouse gas reductions California expected in committing to the National Program. [OAR-2009-0472-7189.1, p.2]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

International Council on Clean Transportation

The technical analyses conducted by EPA and NHTSA are sound and demonstrate that the proposed standards are feasible and the benefits of the rule far outweigh the costs. The analytical framework also provides a good base for further reductions in fuel consumption and greenhouse gas emissions beyond 2016.

US Steel Corporation

Consider the regulation targets for the year 2016 for both agencies. The target for EPA is 250 g/mile CO2 fleet average, equivalent to 35.5 mpg with allowable air conditioning and flex fuel credits. The NHTSA combined fleet target is roughly equivalent to EPA's standard and requires 34.1 mpg combined fleet average, but without air conditioning credits. Should carmakers comply with these rules, the previous goal of Congress (2007 CAFE Law previously specifying 35 mpg by 2020) will have been met four years ahead of schedule. This acceleration places the car companies in a difficult position to satisfy the regulations by making major technical and manufacturing decisions in order to be compliant, some of which could have negative consequences. The National Program

similarly compresses the time frame for steel suppliers and other materials suppliers to develop and produce those new materials, such as the required grades of advanced high-strength steels and ultra high-strength steels, which will help build the required improvements into cars and trucks during this period.

The overly aggressive schedule proposed by this joint NPRM may cause car companies to select low density materials at a faster rate than would be the case if a more extended time period were applied. The harm suffered by the steel industry, the risk to national energy security through acceleration in the use of high-energy materials for vehicle mass reduction, in addition to the harm to the environment and the harm to the economy could be accelerated by this decision. The risk of selecting high energy use and high CO2 emissions materials to adhere to the standard during the 2012-2016 time period would be significant. Our recommendation is to consider reducing the rate of improvement to the time frame originally defined by Congress (35 mpg by 2020) or to ensure that appropriate credits, such as those which may be associated with low energy, low emissions materials (such as steel) in the manufacturing of the vehicle be included in the CAFE/emissions formulae. In this way car companies will have additional time to work with suppliers and their own development teams to acquire the best technologies for the required improvements in fuel economy. [OAR-2009-0472-7197.1, p.7]

University of Pennsylvania Environmental Law Project

We agree with the EPA's response under the Proposed Rule in setting strict minimum compliance levels for carbon dioxide (CO2) emissions. [OAR-2009-0472-7286.1, p. 11]

Sack, Emily

I urge you to find the strongest possible regulations to protect, to begin to reduce the devastating impact that the pollution -- the pollutants have had on our air and our water and our quality of life. [EPA-HQ-OAR-2009-0472-4621, p.157]

[See Docket Number EPA-HQ-OAR-2009-0472-4621, pp.154-157 for detailed comments]

EPA Response:

As discussed in the proposal, section 202(a)(1) provides EPA broad discretion in setting emissions standards for new motor vehicles. 74 FR 49454, 49464-5 (September 28, 2009).

Section 202 (a) (1) of the Clean Air Act (CAA) states that "the Administrator shall by regulation prescribe (and from time to time revise)…standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles …, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." If EPA makes the appropriate endangerment and

cause or contribute findings, then section 202(a) authorizes EPA to issue standards applicable to emissions of those pollutants.

Any standards under CAA section 202(a)(1) "shall be applicable to such vehicles … for their useful life." Emission standards set by the EPA under CAA section 202(a)(1) are technology-based, as the levels chosen must be premised on a finding of technological feasibility. Thus, standards promulgated under CAA section 202(a) are to take effect only "after providing such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period" (section 202 (a)(2); see also NRDC v. EPA, 655 F. 2d 318, 322 (D.C. Cir. 1981)). EPA is afforded considerable discretion under section 202(a) when assessing issues of technical feasibility and availability of lead time to implement new technology. Such determinations are "subject to the restraints of reasonableness", which "does not open the door to 'crystal ball' inquiry." NRDC, 655 F. 2d at 328, quoting International Harvester Co. v. Ruckelshaus, 478 F. 2d 615, 629 (D.C. Cir. 1973). Also see NRDC, 655 F. 2d at 333-34. In developing such technology-based standards, EPA has the discretion to consider different standards for appropriate groupings of vehicles ("class or classes of new motor vehicles"), or a single standard for a larger grouping of motor vehicles (NRDC, 655 F. 2d at 338).

Although standards under CAA section 202(a)(1) are technology-based, they are not based exclusively on technological capability. EPA has the discretion to consider and weigh various factors along with technological feasibility, such as the cost of compliance (see section 202(a) (2)), lead time necessary for compliance (section 202(a)(2)), safety (see NRDC, 655 F. 2d at 336 n. 31) and other impacts on consumers, and energy impacts associated with use of the technology. See George E. Warren Corp. v. EPA, 159 F.3d 616, 623-624 (D.C. Cir. 1998) (ordinarily permissible for EPA to consider factors not specifically enumerated in the Act). See also Entergy Corp. v. Riverkeeper, Inc., 129 S.Ct. 1498, 1508-09 (2009) (congressional silence did not bar EPA from employing cost-benefit analysis under Clean Water Act absent some other clear indication that such analysis was prohibited; rather, silence indicated discretion to use or not use such an approach as the agency deems appropriate).

In addition, EPA has clear authority to set standards under CAA section 202(a) that are technology forcing when EPA considers that to be appropriate, but is not required to do so (as compared to standards set under provisions such as section 202(a)(3) and section 213(a)(3)). EPA has interpreted a similar statutory provision, CAA section 231, as follows:

> While the statutory language of section 231 is not identical to other provisions in title II of the CAA that direct EPA to establish technology-based standards for various types of engines, EPA interprets its authority under section 231 to be somewhat similar to those provisions that require us to identify a reasonable balance of specified emissions reduction, cost, safety, noise, and other factors. See, e.g., Husqvarna AB v. EPA, 254 F.3d 195 (DC Cir. 2001) (upholding EPA's promulgation of technology-based standards for small non-road engines under

> section 213(a)(3) of the CAA). However, EPA is not compelled under section 231 to obtain the ''greatest degree of emission reduction achievable'' as per sections 213 and 202 of the CAA, and so EPA does not interpret the Act as requiring the agency to give subordinate status to factors such as cost, safety, and noise in determining what standards are reasonable for aircraft engines. Rather, EPA has greater flexibility under section 231 in determining what standard is most reasonable for aircraft engines, and is not required to achieve a ''technology forcing'' result.[2]

This interpretation was upheld as reasonable in NACAA v. EPA, (489 F.3d 1221, 1230 (D.C. Cir. 2007)). CAA section 202(a) does not specify the degree of weight to apply to each factor, and EPA accordingly has discretion in choosing an appropriate balance among factors. See Sierra Club v. EPA, 325 F.3d 374, 378 (D.C. Cir. 2003) (even where a provision is technology-forcing, the provision "does not resolve how the Administrator should weigh all [the statutory] factors in the process of finding the 'greatest emission reduction achievable'"). Also see Husqvarna AB v. EPA, 254 F. 3d 195, 200 (D.C. Cir. 2001) (great discretion to balance statutory factors in considering level of technology-based standard, and statutory requirement "to [give appropriate] consideration to the cost of applying … technology" does not mandate a specific method of cost analysis); see also Hercules Inc. v. EPA, 598 F. 2d 91, 106 (D.C. Cir. 1978) ("In reviewing a numerical standard we must ask whether the agency's numbers are within a zone of reasonableness, not whether its numbers are precisely right"); Permian Basin Area Rate Cases, 390 U.S. 747, 797 (1968) (same); Federal Power Commission v. Conway Corp., 426 U.S. 271, 278 (1976) (same); Exxon Mobil Gas Marketing Co. v. FERC, 297 F. 3d 1071, 1084 (D.C. Cir. 2002) (same).

As described above, EPA has broad discretion in determining the appropriate standards to adopt under section 202(a)(1), based on a reasonable consideration and balancing of various factors relevant under that provision. As discussed in the preamble, including section III.D., EPA did consider and balance all of the factors discussed by commenters – the GHG reductions achieved by the various proposed and alternative standards, the technology to achieve such standards, lead time, cost of achieving the standards, as well as other factors such as safety impacts. EPA explained that the final standards will achieve very large and significant reductions in GHGs, as well as very significant fuel savings. EPA identified a technology pathway by which manufacturers could achieve these reductions, modeling in detail each manufacturer's fleet of cars and trucks. The technology pathway calls for the widespread introduction across the fleet of several different kinds of technology that are currently available but with much more limited usage, as well as an expectation of a limited use of some more costly technology, such as HEVs. For the near term model years at issue in this rulemaking, EPA expects that there will only be a very limited use of advanced technologies such as EVs and PHEVs. EPA evaluated the cost of this spread in technology and found it reasonable both from the perspective of costs per vehicle as well as the total benefits of the rule far outweighing the total costs. Lead time is a critical consideration and EPA determined that there is adequate lead time to employ the financial, engineering, and other resources needed to

[2] 70 FR 69664, 69676, November 17, 2005.

achieve the standards, recognizing that a significant portion of these human and capital resources would need to be expended during the next few years. Lead time is somewhat constrained for these model years, as it is now 2010 and MY 2012 is only a number of months away. The farthest model year, 2016, also is not many years from now, given the time needed for redesigning cars and trucks for new production. EPA also took into account that the automobile manufacturing industry has been and continues to face serious economic and other constraints, stemming from the recent economic problems in the U.S. and around the world. This is an important context to EPA's evaluations of cost and lead time considerations.

The final standards will achieve very significant reductions in GHG emissions and fuel savings, the technology to achieve these reductions is identified and commercially available, and the costs are reasonable. EPA also recognizes that the standards will be difficult for the manufacturers to achieve and present major hurdles for them to overcome. While the technology is generally well understood and can be implemented over these model years, the lead time to do so is relatively short and the capital and human resources that must be employed are large, especially in the next few years, and must occur in the context of current serious economic strain on this industry. Considering all of these factors, EPA determined that the final standards are a reasonable and appropriate balance of the relevant factors under section 202(a)(1).
US Steel commented that the rate of improvement associated with the final standards could force the use of low density, high energy (required for production) materials before the steel industry had time to ramp up the production capacity of high strength, low energy (required in production) steel. We do not agree that the rate at which the final standards require improvement will result in the permanent reduction in the use of high strength steel. First, the overall weight reduction projected for the final standards is only 4%. As discussed in the Joint TSD, several manufacturers have already announced plans to achieve weight reductions approaching this level. Second, several manufacturers already utilize high strength steel components, indicating some production capacity and general engineering awareness of its benefits. Third, given this awareness, we do not believe that it is likely that manufacturers would lock themselves into vehicle designs which precluded future use of the benefits of high strength steel, even if they should decide to use another material in the very near term due to capacity constraints.

US Steel specifically suggested that we slow the rate of improvement in the fuel economy and CO2 standards to that described in EISA. Again, we do not agree that this would be acceptable. First, the 35 mpg fleet-wide fuel economy mentioned in EISA is a minimum requirement, not a mandated target. Second, with the exception of several smaller manufacturers, the final standards are not projected to require the substantial use of hybrid or diesel technology. To promulgate more relaxed standards would reduce the use of much more conventional technology. If manufacturers are concerned about supply of high strength steel, which is US Steel's main concern, we believe that manufacturers have several options available to compensate, one being increased use of hybrid and diesel technology in market segments where they have experience with these technologies and where consumer acceptance has been demonstrated.

EPA also considered standards that were less stringent and more stringent than those adopted. EPA took a similar approach in evaluating these alternative standards. EPA considered and balanced all of the relevant factors, comparing and contrasting these to the final standards. For example, EPA rejected an alternative of more stringent standards that would achieve an average 6% per year increase. EPA's rejection of the 6% alternative was based largely on concerns over the adequacy of the lead time in a context of a significant increase in technology and costs, and a significant increase in the risk of non-compliance by manufacturers. These real world concerns indicate that the 6% per year alternative is not an appropriate standard for the MY 2012-2016 time frame, even though it would by definition achieve greater GHG reductions and fuel savings than the final standards.

With respect to the 6 percent per year standards, the levels of requisite control technology increased substantially relative to those under the final standards, as would be expected. Industry-wide, the largest increase was a 25 percent increase in the application of start-stop technology and 13-17 percent increases in the use of gasoline direct injection engines, turbo charging and dual clutch transmissions. Our projections for BMW, Porsche, Tata and Volkswagen continue to show they are unable to comply with the CO_2 standards in 2016, so our projections for these manufacturers do not differ relative to the final standards, though the amount of short-fall for each firm increases significantly, by an additional 20 g/mi CO_2 per firm. However, Ford and Mitsubishi join this list. Five manufacturers are projected to need to increase their use of start-stop technology by at least 30 percent.

The 6% per year alternative represents a significant increase in both the technology required and the overall costs compared to the final standards. In absolute percent increases in the technology penetration, compared to the final standards the 6% per year alternative requires for the industry as a whole: an 18% increase in GDI fuel systems, an 11% increase in turbo-downsize systems, a 6% increase in dual-clutch automated manual transmissions (DCT), and a 9% increase in start-stop systems. For a number of manufacturers the expected increase in technology is greater. For the industry as a whole, the per-vehicle cost increase for the 6% per year alternative is nearly $500. On average this is a 50% increase in costs compared to the final standards. At the same time, CO_2 emissions would be reduced by about 8%, compared to the 250 g/mi target level.

As noted in the preamble, EPA's OMEGA model predicts that for model year 2016, Ford, Mitsubishi, Mercedes, BMW, Volkswagen, Jaguar-Landover, and Porsche do not meet their target under the 6 percent per year scenario. In addition, Chrysler, General Motors, Suzuki and Nissan all are within 2 grams/mi CO_2 of maximizing the applicable technology allowed under EPA's OMEGA model – that is, these companies have almost no head-room for compliance. In total, these 11 companies represent more than 58 percent of total 2016 projected U.S. light-duty vehicle sales. This provides a strong indication that the 6 percent per year standard is much more stringent than the final standards, and presents a significant risk of non-compliance for many firms, including four of the seven largest firms by U.S. sales.

These technology and cost increases are significant, given the amount of lead-time between now and model years 2012-2016. In order to achieve the levels of technology penetration for the final standards, the industry needs to invest significant capital and product development resources right away, in particular for the 2012 and 2013 model year, which is only 2-3 years from now. For the 2014-2016 time frames, significant product development and capital investments will need to occur over the next 2-3 year in order to be ready for launching these new products for those model years. Thus a major part of the required capital and resource investment will need to occur now and over the next few years, under the final standards. EPA believes that the final rule (a target of 250 gram/mile in 2016) already requires significant investment and product development costs for the industry, focused on the next few years.

It is important to note, as discussed in the preamble, as well as in the Joint Technical Support Document and the EPA Regulatory Impact Analysis document, the average model year 2016 per-vehicle cost increase of roughly $950 includes an estimate of both the increase in capital investments by the auto companies and the suppliers as well as the increase in product development costs. These costs can be significant, especially as they must occur over the next 2-3 years. Both the domestic and transplant auto firms, as well as the domestic and world-wide automotive supplier base, is experiencing one of the most difficult markets in the U.S. and internationally that has been seen in the past 30 years. One major impact of the global downturn in the automotive industry and certainly in the U.S. is the significant reduction in product development engineers and staffs, as well as a tightening of the credit markets which allow auto firms and suppliers to make the near-term capital investments necessary to bring new technology into production. The 6% per year alternative standard would impose significantly increased pressure on capital and other resources, indicating it is too stringent for this time frame, given both the relatively limited amount of lead-time between now and model years 2012-2016, the need for much of these resources over the next few years, as well the current financial and related circumstances of the automotive industry. EPA is not concluding that the 6% per year alternative standards are technologically infeasible, but EPA believes such standards for this time frame would be overly stringent given the significant strain it would place on the resources of the industry under current conditions. EPA believes this degree of stringency is not warranted at this time. Therefore EPA does not believe the 6% per year alternative would be an appropriate balance of various relevant factors for model years 2012-1016.

There is particular sensitivity to predicating these standards on more aggressive penetration of strong hybrid technologies. The more stringent alternatives are all projected to necessitate more extensive use of hybrid technologies. Several hybrid technologies have already been commercially demonstrated and their use could clearly be expanded. (Several manufacturers may even require extensive use of hybrid technology to meet the final standards due to certain characteristics of their vehicles which lead to unusually high fuel consumption and CO2 emissions.) However, while a couple of manufacturers have extensive experience with high volume hybrid production and use in smaller cars, some large volume manufacturers have minimal experience. No

manufacturer has extensive experience across all of the market segments believed to be suitable for hybridization. Current world-wide production capacity for hybrid components is relatively small. Thus, the application of hybrid technology to a significant fraction of U.S. sales in the 2012-2016 time frame would require extensive new resources at every level: design, component production, vehicle integration, and vehicle production. In addition, since the electric components and batteries in a fully optimized hybrid design (capable of achieving the CO2 emission reductions projected in the Joint TSD) usually require significant changes to the vehicle design, hybrids will likely require separate safety assessments, increasing the need for engineering and testing resources during a time of economic challenge.

Moreover, one of the key components of the hybrid technology is the battery or other type of device to store energy and battery technology is developing rapidly. Establishing 2012-2016 standards which necessitate extensive use of hybrid technology each model year would 1) require dramatic capital investment in plants needed to produce the hybrid components, and 2) would commit manufacturers to large investments in specific battery technologies which may not be the technology of choice in just a few years. We believe that it is much more prudent to give this particular technology a few more years of development before basing standards on its widespread use. We believe that the final standards are sufficiently stringent that hybrid technology will still be used on significant numbers of vehicles and encourage the continued development of this technology.

All of these factors apply even more strongly to the more advanced plug-in hybrid and fully electric vehicle technologies. These vehicles require much larger battery capacity and are much more likely to require use of the new lithium-based materials. Significant application of these two technologies would not only require substantial increases in lithium battery production, but would require entirely new mining production capacity, as well.

In short, EPA believes that it has made an informed and reasoned choice in rejecting the 6% alternative, and does not accept the commenters' characterization that the basis for the choice is unsubstantiated or otherwise arbitrary.

Certain commenters rejected EPA's approach to considering and balancing the relevant factors under section 202(a)(1). They argued that this approach was ad hoc and narrow, and that EPA should announce and apply a different approach to standard setting for this rulemaking. EPA should first determine a specific goal of GHG reductions and oil savings, based on an assessment of national needs, and then apply considerations of technological feasibility and cost, in order to be as technology forcing as possible or practicable. One suggestion was to have a quantitative goal – identify the country's goal for reducing GHGs and then assign a proportionate share to the transportation sector as a default position. Commenters also suggested that EPA should assign more priority to achieving the environmental goal and thereby prioritizing public health and welfare, placing that above economic or other considerations. Commenters suggested this was required under both "the agency's … responsibility to set protective standards consistent with its statutory mandate" (Public Citizen) and with the CAA's mandate to "be as

technology-forcing as possible" (Public Citizen; see also Sierra Club). Other commenters suggested that the decision making criteria should call for a standard be no less stringent than one that maximizes net benefits, or that this should be a presumed minimum.

The comments appear to mischaracterize CAA section 202 (a) (1), and the discretion Congress provided to EPA under that provision. Commenters appear to read this provision as a mandate from Congress that EPA place the greatest emphasis on achieving a desired environmental goal, with secondary emphasis on other factors such as economic considerations or considerations of lead time and technological feasibility. However, Congress clearly provided very broad discretion to EPA and did not direct its discretion in the ways suggested. For example, section 202(a) is not a provision where reducing risk is the only or the highest priority assigned by Congress. Compare, e.g., sections 109(b) and 112(f)(2). It is also not a provision where Congress mandated a certain minimum degree of technology or emissions reduction. See section 112(d)(3). It is not a provision where Congress directed EPA to be technology forcing and achieve the greatest achievable reductions from technology that will be available in the future. See section 202(a)(3) and 213(a)(3). Instead Congress referred to consideration of available technology, its effectiveness and cost, the lead time necessary for compliance. See generally 74 FR at 49464-65. Although section 202 (a) (1) standards may be technology-forcing, they are not required to be. 74 FR at 49464-65. As discussed above with respect to section 231(a), CAA section 202(a)(1) does not specify the degree of weight to apply to each factor, and EPA accordingly has discretion in choosing an appropriate balance among the relevant factors. Thus EPA rejects that the approach taken in this rule of considering and balancing the various relevant factors is inconsistent with the discretion provided by Congress under section 202(a)(1).

EPA also disagrees that a more determinative or approach to standard setting or more specific or objective decision making criteria are either required or called for in this rulemaking. For example, EPA does not believe it is appropriate for this rulemaking to try and determine a free standing national goal for reducing GHGs and saving oil, and either assigning a specific share to these light-duty sources or using the goal as a measure of some sorts for standard setting. In the relatively short timeframe for this rulemaking, it would be unrealistic to try and develop such a goal, given the great complexity and national input that this would involve. In addition, it is not at all clear that for this specific rulemaking that such a goal would be of any more use than a more general and qualitative goal of achieving significant reductions, given the recognized need for significant reductions and taking into account the limited scope of the near-term model years covered by this rulemaking. In the context of this short term rulemaking, covering just the next handful of model years, with limited lead time to implement changes in technology, EPA does not believe that a more specific and quantitative goal of longer term GHG reductions for the nation and this sector would provide any better guidance to the agency than the more qualitative but no less important goal EPA has employed - achieving significant reductions by moving the industry to the point where available near-term technology is broadly employed across the fleet, over the next few model years, taking into consideration the lead time needs of the industry and other factors.

EPA also disagrees that this amounts to a failure to place the proper priority on achieving the health and welfare protection called for by the CAA. Section 202(a)(1) provides the guide to Congress' intent on this issue, and EPA has employed the broad discretion provided by that provision to aim for and achieve very significant reductions in GHGs, after taking careful consideration of the factors relevant under that provision, as described above. This approach is fully consistent with section 202(a)(1), and EPA's consideration and balancing of the factors in this rulemaking gives full consideration of the need to achieve significant GHG reductions to help reduce the risk to public health and welfare from global climate change.

EPA also disagrees that it should use specific criteria for considering cost, using the maximization of net benefits as a minimum. As explained above and in the preamble, EPA has very good reasons for rejecting the 6% alternative, and that alternative is still significantly below the level that NHTSA has estimated would maximize net benefits. The alternative standards evaluated by NHTSA as providing the maximum net benefits (given all of the market, technological, economic, and other inputs to the agencies' analyses) are even more stringent and less supportable than the 6% alternative rejected by EPA. While the relationship of marginal costs to marginal benefits is certainly a factor for EPA to consider, and EPA has considered it, the currently-estimated relationship of marginal costs to benefits does not, by itself, adequately determine the appropriate balance of the several factors EPA must consider, such as consideration of lead time, overall cost, and technological feasibility. It also assumes that all costs and befits have been fully and accurately identified, and that is certainly not the case. Even so, per NHTSA's analysis of this scenario, the incremental cost of the maximum net benefit scenario exceeds that of the final standards by $700 per car for only a 2.5 mpg improvement and $1100 per truck for a two mpg improvement. These incremental costs are far out of proportion to those of the final standards. Numerous manufacturers were projected to be required to exceed the 15% cap on hybridization, particularly for their truck lines. EPA believes it is better in this rulemaking to consider this factor as one of several factors, but not to consider it as a single or predominant criterion for setting the standards in this rulemaking under section 202(a)(1).

As discussed above, EPA is not required under section 202(a)(1) to set standards that are technology forcing, as under section 202(a)(3) or section 213(a)(3). However, the final standards are readily justifiable under CAA provisions which are technology-forcing (allowing considerations of future advances in emission control capability as well as those already in existence and application). Neither section 202 (a) (1) nor provisions which are explicitly technology-forcing (e.g. section 202 (a)(3) requiring "the greatest degree of emission reduction achievable") specify the weight to accord each relevant decision factor, leaving EPA with great discretion in determining an appropriate balance. See Sierra Club v. EPA, 325 F. 3d 374, 378 (D.C. Cir. 2003). And although the commenters are correct that the statute's environmental goals are a dominant consideration in weighing the relevant factors, Husqvarna AB v. EPA, 254 F. 3d 195, 200 (D.C. Cir. 2001), EPA retains great discretion to weigh the relevant factors so long as its resolution is within a zone of reasonable values. See, e.g. Hercules Inc. v. EPA, 598 F. 2d 91, 106 (D.C. Cir. 1978). As discussed in detail in section III.D. of the preamble to

the final rule (and in particular, in sections III.D. 6 and 7), the final standards are projected to require very significant penetration of technologies throughout the fleet and already raise challenging issues of sufficient lead time at the selected level of stringency. As further discussed in the preamble and in later responses in this comment response section, EPA reasonably considers more stringent standards to be inappropriate

Several commenters were also concerned that the approach taken in this rulemaking would limit EPA's discretion in future rulemakings for this or other sectors, and recommended that EPA announce its approach for future rulemakings. As described above, EPA does not believe it is appropriate to identify a more precise or quantitative approach to standard setting for this rulemaking. These same reasons lead EPA to not announce such an approach for a future rulemaking concerning later light-duty model years. The discussion above and in the preamble makes it clear that the specific facts before the agency are critical in determining the appropriate balance of the relevant factors. It is useful to preserve the discretion to address the issues that must be considered in standard setting under section 202(a)(1) without a predetermined approach. That preserves EPA's discretion to take into account the detailed circumstances before it. For example, if longer lead time is involved in a future rulemaking this could lead to consideration of greater changes in technology, leading to greater reductions. Section 201 (a) (1) provides EPA great flexibility to tailor standards to circumstances, and EPA sees no advantage in a priori limiting that desirable degree of regulatory discretion.

Several commenters suggest that the proposed standards were insufficiently stringent due to the public's demonstrated shift towards smaller vehicles and away from trucks. However, as fuel prices have stabilized at levels below $3 per gallon, truck sales have rebounded to some extent and sales of hybrids have fallen as a percentage of overall sales from their highs in 2008. Thus, it is not prudent to base long term purchasing trends on potentially short term market perturbations. We believe that the technology needed to meet the final standards will provide fuel savings which more than pay for itself over the life of the vehicle under essentially any realistic future fuel price scenario. Again, we also believe that the technological improvements which will occur over the 2012-2016 time period will provide a solid foundation for further improvements in the future.

One commenter suggested that standards which reflected 5% per year reductions in CO2 emissions should have been analyzed and potentially selected. Of course, numerous additional alternative standards can be identified in addition to those analyzed. We believe that standards beyond those being promulgated would have pushed most manufacturers to greater hybrid use. For example, per NHTSA's analysis of this scenario, the incremental cost of the 5% per year reduction scenario exceeds that of the final standards by $200 per car for only a 1.1 mpg improvement and $400 per truck for a 0.8 mpg improvement. These incremental costs are much greater than those of the final standards. From this NHTSA analysis, it appears that the standards being promulgated in this rule require the use of nearly all of the non-hybrid and non-diesel technology projected to be available in this timeframe for many of the large volume manufacturers. While hybrid and diesel technologies are technically feasible and have been commercialized in several applications, the investment costs for these technologies far

exceeds those of the other technologies. The technology projected to be required to enable compliance with the final standards already requires significant new investment for dual clutch transmissions and start stop systems. Given the current economic climate, we are concerned that manufacturers and major suppliers may not have sufficient capital to build the capacity for large volumes of electric motors, batteries, transmission control systems, diesel engines, nor the engineering resources to begin designing this systems essentially immediately. We believe that the substantive addition of these major technologies is best left to the post-2016 time period.

We appreciate the comments mentioning concern about the need to make near term decisions about the use of weight saving materials. However, the projected reductions in vehicle mass projected for the final standards are relatively small (e.g., 4% on average, although some vehicles are projected to apply more mass reduction and some less). While manufacturers are free to choose from a variety of technology with which to meet the final standards, we believe that such weight reductions can be achieved by choosing methods which will prove to be beneficial beyond 2016.

3.3.1 2016 Standard and selection of proposed standards versus 4% per year and 6% per year alternative standards

Organization: Center for Biological Diversity
Toyota Motor North America
New York State Department of Transportation (NYSDOT)
Consumer Federation of America

Comment:

Center for Biological Diversity

III. The Proposed Rule Sets Impermissibly Low Mileage and GHG Emission Standards By Arbitrarily and Capriciously Undervaluing the Benefits and Overvaluing the Costs of More Stringent Standards and Failing to Adhere to the Overriding Goal of Conserving Energy

When Congress enacted EPCA, it specified its goals: to decrease the nation's dependence on foreign oil imports, to enhance national security and to achieve the efficient utilization of scarce resources. Center for Biological Diversity, 508 F.3d at 514. To achieve these goals, EPCA expressly demands that NHTSA set the maximum feasible fuel economy standards. 49 U.S.C. § 32902(a). In doing so, NHTSA must weigh four factors: technological feasibility, economic practicability, the effect of other motor vehicle standards on fuel economy, and the need of the United States to conserve energy. 49 U.S.C. § 32902(f). In balancing these factors, NHTSA "cannot set fuel economy standards that are contrary to Congress's purpose in enacting the EPCA – energy conservation," it cannot act arbitrarily and capriciously; it cannot advance conclusions unsupported by the evidence; if it conducts cost-benefit analyses, it may not assign values of zero to benefits that can be ascertained within a range; and it cannot bias its cost-

benefit analysis. Center for Biological Diversity, 508 F.3d at 531, 534. As set forth above, Section 202(a) of the Clean Air Act requires a similar analysis, setting control standards no later than the availability of control technology allows, while giving appropriate consideration to compliance costs. The Proposed Rule fails to meet the requirements of the law because none of the relevant factors support its conclusions. [OAR-2009-0472-7265.1, p. 5]

A. Technological Feasibility Supports More Stringent Standards

The Proposed Rule admits that "all" of the technology to improve fuel efficiency is commercially available today:

NHTSA's and EPA's technology assessment indicates there is a wide range of technologies available for manufacturers to consider in upgrading vehicles to reduce GHG emissions and improve fuel economy . . . All of these technologies are already available today, and EPA's and NHTSA's assessment is that manufacturers would be able to meet the proposed standards through more widespread use of these technologies across the fleet. 74 Fed. Reg. 49470 (emphasis added).

This is a stunning conclusion, as it means that if deployed, technology already in use today could allow the U.S. light-duty vehicle fleet to meet the Agencies' 2016 mileage standard of 34.1 miles per gallon and greenhouse gas emission standards of 250 grams per mile in 2009, seven years earlier than here projected. Plainly, one of the four factors NHTSA must consider – technological feasibility – points in only one direction: much more stringent standards. Indeed, the Agencies could not defend any claim that technological constraints prevent the achievement of much higher standards. This is so because the average fuel economy of the vehicle fleets presently on the roads in the European Union (at 41.8 mpg in 2008) and Japan (at 40.6 in 2007) already far exceed the standards the Agencies are proposing for 2016.6 China's fleet, at 32.9 mpg in 2008, and South Korea's, at 31.0 mpg in 2008, are currently not far behind the U.S. proposal for 2016. The following graph quickly illustrates the point: [See OAR-2009-0472-7265.1, p. 7 for the graph] [OAR-2009-0472-7265.1, pp. 5-7] [See OAR-2009-0472-7265.1, pp. 5-8 for a detailed discussion of technological feasibility.]

D. The Need of the United States to Conserve Energy Supports More Stringent Standards

It should go without saying that the last of the factors to be considered under EPCA, the United States' need to conserve energy, supports setting more stringent mileage and tailpipe GHG emission standards. "Motor vehicles are the second largest greenhouse gas-emitting sector in the U.S., after electricity generation, and accounted for 24 percent of total U.S. GHG emissions in 2006." Proposed Rule, 74 Fed. Reg. 49632. The light duty vehicles that are the subject of this rulemaking account for fully 40% of all U.S. oil consumption. Id., 74 Fed. Reg. 49459. Increasing mileage standards for this vehicle fleet is the single most effective and quickest available step the U.S. can take to conserve energy and to reduce the U.S. dependence on foreign oil, and also has an immediate and highly significant effect on total U.S. GHG emissions. Indeed, it would be difficult to

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overemphasize the critical impact on vital national interests that could be achieved if the Proposed Rule would simply set its 2016 standards at the fuel efficiency and GHG emission reduction levels the European Union or Japan implement today.[OAR-2009-0472-7265.1, pp. 19-20] [See OAR-2009-0472-7265.1, pp. 20-25 for an extensive discussion of this issue.]

Toyota Motor North America

In general, the overall level of the standards in 2016 model year is consistent with Toyota's expectation, the agreements signed last May, and the joint Notice of Intent (NOI) published last spring. Additional comments and responses to specific questions posed by the agencies are covered below. Where appropriate, we have identified to which agency's portion of the joint proposal our comments are directed. [OAR-2009-0472-7291, p.6]

In general, the proposed standards in 2016 model year (a new vehicle fleet-wide level of 250 grams of C02 per mile - equivalent to 35.5 mile per gallon) are consistent with Toyota's expectation, the agreements signed last May, and the joint Notice of Intent (NOI) published last spring. While meeting these levels will be a serious challenge for our engineers and product planners, we remain committed to the agreement and will make every effort to meet the challenge. [OAR-2009-0472-7291, p.7]

New York State Department of Transportation

The baseline condition used in the analysis of alternatives for the previous CAFE proposals was based on manufacturers' confidential plans for each model year, whereas the baseline in this proposal is based on each manufacturer's actual MY 2008 fleet. We agree that this approach will result in more complete market data and is more transparent than relying on manufacturers' confidential plans. It is also illustrative. While the results vary somewhat among manufacturers, the current MY 2011 baseline fuel economy is slightly better than the baseline fuel economy that was assumed in the MY 2011 final rule. This fact indicates that the auto industry as a whole is capable of achieving progress in improving fuel economy more rapidly than the rate that would be required by the proposed rule. [OAR-2009-0472-7531.1, p.2]

Since the actual MY 2011 baseline is more fuel efficient than the previously assumed baseline, it is difficult to understand why the fuel economy projections for many of the alternatives that were considered in developing this proposed rule are less stringent than similar alternatives that were evaluated in the development of the MY 2011-2015 standards. For example, the 'Total Costs = Total Benefits (TCTB)' alternative that was evaluated in the previous CAFE proposal was projected to result in a required fuel economy of 43.3 mpg for MY 2015 passenger vehicles and 33.1 mpg for MY 2015 light trucks. Conversely, the TCTB alternative in today's proposal is projected to only achieve 40.8 mpg for MY 2015 passenger vehicles and 30.9 mpg for MY 2015 light trucks. We request that NHTSA and EPA provide an explanation as to why this 'backsliding' of the

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effectiveness of similar alternatives has occurred between the 2008 and 2009 proposals. [OAR-2009-0472-7531.1, p.2]

Consumer Federation of America

[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 106-107.]

In particular, EPA and NHTSA should balance the three goals in the underlying statutes of technical feasibility, economic practicability, and the need to conserve energy, and the statutes really are in agreement here, by setting the standard at the mid point of the range between maximum economic benefit and maximum practicable environmental benefit.

EPA Response:

Citizens for Biological Diversity (CBD) comments that because the standards are based on performance of technology already in existence, this indicates that much more stringent standards should be adopted, and even that the MY 2016 standards are immediately feasible. CBD also points to fuel economy standards of other industrialized nations as support for its proposition that much more stringent standards should be adopted.

As explained in section III.D. 7 of the preamble to the final rule, existence of technology cannot be equated with its fleet-wide application. Significant issues of lead time exist to allow the large-scale penetration of technology throughout the fleet to meet the final standards, much less more stringent alternatives. Among the critical issues (largely ignored by the commenter) are availability of sufficient capital and technical personnel. In addition, it takes several years to redesign a vehicle, and several more to design an entirely new vehicle not based on an existing platform. Thus, redesign cycles are an inextricable component of adequate lead time under the Act consideration of the time needed to design. Other lead time and cost issues are raised as well, such as the issue of stranded capital both for the original equipment manufacturer (OEM), but up and down the OEM supply chain. Nor is the comparison with other nations' fuel economy standards proper, given (among other things) the different fleet mixes involved and the different test procedures utilized. In fact, as explained in the preamble discussion, these nations' standards are predicated on use of the same technologies projected for the final GHG standards. Moreover, if one is to compare these standards with those of another entity, the most directly relevant comparison is with the GHG standards for light duty vehicles of the State of California. The federal standards are of comparable stringency, and the California Air Resources Board in their public comments deemed their level of stringency to be appropriate.

A comparison of the 2011 MY fuel economy and CO2 emission levels projected in NHTSA's 2011 MY CAFE rule (including the proposed rule which contained projections through 2016) and those projected is only minimally relevant to the projection of feasible and cost effective standards in MY 2016. First, the sales of specific vehicle models and

vehicle segments differ significantly between the two rulemaking analyses. The projections for the NHTSA 2011 CAFE rule were based in large part on manufacturer product plans which are now several years old. Those for the current rule are based on projections made by an industry analyst, CSM International. Differences in projected fleetwide fuel economy and CO2 emission levels would be primarily a function of relative car and trucks sales and relative size of these vehicles. Both of these factors change between MYs 2011 and 2016 in both sets of projections. Thus, little inference can be drawn from MY 2011 comparisons about MY 2016.

The specific cost and effectiveness of a number of technologies has also changed between the two rule making analyses. Future fuel prices also differ, as do a number of other important factors, such as annual VMT per vehicle, the rebound rate, etc. Thus, again, the comparison of the CAFÉ 2011 MY fuel economy levels in previous rules to that made in the NPRM being made by NYDOT is not a reliable indicator of projections for later model years, particularly those based on economic criteria, such as standards projected to maximize net quantifiable benefits.

NYDOT,also recommends that EPA implement CO2 standards equivalent to the fuel economy standards resulting from NHTSA's 'Total Costs Equal Total Benefits (TCTB)' alternative for passenger vehicles and the 'Technology Exhaustion' alternative for light duty trucks. These two scenarios require the application of even more technology and involve even higher costs than that of the 6% reduction per year scenario. Thus, the same concerns presented above for the 6% reduction per year standards apply to an even greater extent here. This is sufficient reason to reject this recommendation on the part of NYDOT.

3.3.2 2012-2015 Standards

Organization: Mercedes-Benz (Daimler AG)
Chrysler Group LLC (Chrysler)
Mitsubishi Motors R & D of America (MRDA)
Volkswagen Group of America (Volkswagen)
Toyota Motor North America
Recreational Vehicle Industry Association (RVIA)

Mercedes-Benz (Daimler AG)

The passenger car standards should be set to reach the MY 2016 goals through a generally linear stringency level phase-in through MYs 2012-2015. Using a generally linear phase-in is both consistent with the agencies' Notice of Intent and with the overarching policy of transitioning to a U.S. vehicle fleet. [OAR-2009-0472-7193.2, p.1]

[The following comments are nearly the entirety of the statement for the above subheading, from [OAR-2009-0472-7193.2, p.2-4]

In the Notice of Intent published on May 22, 2009 and announcing EPA and NHTSA's intention to publish joint rulemaking, the agencies made clear their intentions to propose GHG standards capable of achieving on average 250 g/mile of CO_2 in model year 2016, and further that "[t]he standards for earlier years would begin with the 2012 model year, with a generally linear phase-in from MY 2012 through to model year 2016. NHTSA expects to propose appropriate related CAFE standards." 74 Fed. Reg. 24007, 24008 (May 22, 2009) (emphasis added).

Rather than following the foregoing guideline, the proposed standards place a substantial amount of emphasis on passenger car improvement in the earlier model years. This creates additional challenges, not anticipated at the time of the Notice of Intent, for manufacturers whose fleets are primarily composed of passenger cars, and in particular for limited-line, lower-volume manufacturers who were to be provided lead time through the TLAAS.

These additional challenges not only make the flexibilities and credits proposed in the GHG program more significant, they also mandate careful consideration by the agencies of additional flexibilities, such as including air conditioning credits in the CAFE program. Further, placing an earlier and larger burden on the light-duty vehicle population, as opposed to equalizing the annual increases, raises serious questions as to whether the regulatory policy of this proposal is encouraging the appropriate type of fleet mix to redress the serious public health and welfare and energy security concerns leading to this rulemaking.

As noted above, the Notice of Intent expressed an intention to design a program that would equal the levels in the California program at the end of the rulemaking period, or by MY 2016. The Notice of Intent clearly indicates not that California levels were to be achieved each year, but rather that they would be reached by MY 2016 and that the interim years would be generally linear. DAG submitted a letter to Secretary LaHood and Administrator Jackson making clear its commitments based on EPA proposing national GHG standards and NHTSA proposing CAFE standards for MYs 2012-2016 "as substantially described in the May, 2009 Notice of Intent to conduct rulemaking" and certain additional actions. See DAG Commitment Letter, available at http://www.epa.gov/otaq/climate/regulations.htm#1a. While DAG nonetheless remains committed to meeting the standards, DAG considers the movement away from generally linear stringency changes to those focusing on MYs 2012 and 2013 to be a substantial deviation from the description provided in the May 2009 Notice of Intent.

Chrysler Group LLC (Chrysler)

The endpoint 2016 model year EPA greenhouse gas industry fleet average standard of 250 g/mile was as expected, based on the Notice of Intent. The Notice of Intent states that 'the standards for earlier years (pre-2016) would begin with the 2012 model year, with a generally linear phase-in from MY 2012 through to model year 2016' (emphasis added). However, the Proposed Rules shows that the intermediate 2012-15 MY standards increase in a significantly non-linear fashion at the start of the program - front loading a

disproportionate amount of the task to the early years of the program. In particular, the passenger car standard increase between the 2011 and 2012 model years is more aggressive than necessary. [NHTSA-2009-0059-0124, p.8] [[Chrysler also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, p. 49.]

Moreover, President Obama's Rose Garden Remarks also noted that 'the goal is to set one national standard that will rapidly increase fuel efficiency ... by an average of five percent each year between 2012 and 2016, building on the 2011 standard ..., (emphasis added). Although 2012 is the first year of the EPA program, given the 'direct and close, relationship between tailpipe greenhouse gas emissions and fuel economy, the 2011 NHTSA CAFE standards (and their equivalent in greenhouse gas emissions terms) should have been used when determining the phase-in to the 2016 model year goal. [NHTSA-2009-0059-0124, p.8]

In the NPRM, excluding model years 2009-2011, EPA and NHTSA propose a generally linear phase-in between the 2012 and 2016 model years, but the passenger car greenhouse gas emission reduction of 11.2% between the 2011-2012 model years is extremely steep and unprecedented. The industry average truck fleet also has the largest GHG emission reduction of 4.6% between the 2011-2012 model years. [NHTSA-2009-0059-0124, p.8]

In addition to the numerically large increase in passenger car standards between the 2011 and 2012 model years, manufacturers need to simultaneously accommodate changes to the passenger car fleet definition. Beginning in the 2011 model year, certain 2WD light-duty trucks are reclassified as passenger cars. In the 2012 model year, additional light-duty trucks are re-classified as passenger cars based on a lack of 3-row standard seating. These reclassifications move truck-like utility vehicles from the light-duty truck category to the passenger car category, subjecting them to more stringent standards and, as a result, they become relatively poorer fuel economy and greenhouse gas performers, reducing manufacturers' ability to comply with the more stringent passenger car standards. [NHTSA-2009-0059-0124, p.9]

While the ability to earn credits and the carry-forward and carry-back credit flexibility helps manufacturers' ability to comply, the large jump in standards is at a time when manufacturers can do little to impact the actual fleet performance. Given typical model year lead times, this setting of extremely aggressive 2012 model year standards does not allow for sufficient leadtime to re-engineer vehicles to meet this stringency increase. The type of major product changes necessary to increase vehicle efficiency by over 10% requires sufficient time to re-engineer vehicles. This type of change normally occurs during a product re-design or a new product release, not mid-model year modifications. [NHTSA-2009-0059-0124, p.9]

Recommendation:

Chrysler recommends that the agencies set passenger car and light-duty truck standards with a linear phase-in to the 2016 model year goals as envisioned during the signing of

the May 2009 manufacturer and California Letters of Intent in response to the National Program. Chrysler supports the general methodology of linearizing the standards suggested by the Alliance of Automobile Manufacturers. [NHTSA-2009-0059-0124, p.9]

Mitsubishi Motors R & D of America (MRDA)

There are significant challenges in the increased stringency between the 2011 and 2012 model years. The rate of this increase will likely result in excessive costs and burdens as many vehicles are quickly reconfigured to comply with these new standards. [OAR-2009-0472-7125.1, p.1]

Smaller Automakers need more time to develop new technologies and to implement design changes. The proportional effort is much greater to meet stringent standards and far less resources are available for long term R&D to develop and introduce new technologies. Further, smaller Automakers are unable to negotiate timely, cost effective supplier contracts – suppliers favor high volume Automakers and limit the technology available to smaller Automakers. Overall, it takes longer/costs more for limited line vehicle manufacturers to introduce new technologies. [OAR-2009-0472-7125.1, p.2]

The proposed stringent standards are particularly challenging for limited line, "intermediate volume" manufacturers, especially considering that Mitsubishi Motors was not subject to the California AB1493 GHG regulations until the MY 2016. [OAR-2009-0472-7125.1, p.5]

Volkswagen Group of America (Volkswagen)

In addition, Volkswagen questions the need for the large step in stringency proposed from the 2011 MY CAFE regulation to the 2012 MY targets proposed in the NPRM. We believe the 2016 MY target combined fleet target of 250 gram/mile is achievable and that the targets for each model year can be adjusted to meet the same air quality targets without such a large jump in the requirements in the first year of the regulation. [OAR-2009-0472-7210.1, p.5]

Toyota Motor North America

Ramp Rate of the Target Curves

The rate of increase in the proposed car targets by both agencies is front-loaded and should be adjusted. As can be seen in Figures 1 and 2, the rate of increase in the car target curves between 2011 MY and 2012MY is inconsistent with the rates of increase in subsequent model years. The largest increase in target values occurs in the first year of the proposed regulation, when manufacturers have the least available lead time to integrate technology into the fleet. While the curves are shown only for NHTSA's portion of the joint proposal (in MPG space), EPA's proposed target curves show the same trend. [OAR-2009-0472-7291,p.9]

Consistent with comments provided by Toyota in previous CAFE rulemakings, we suggest the rate of increase be 'smoothed' between the existing 2011 model year car curves and the final 2016 model year proposed curves. Such an adjustment would align more closely with product planning cycles and lead time requirements. [OAR-2009-0472-7291,p.9] [See OAR-2009-0472-7291, pp.9-11 for a detailed discussion on this issue]

Recreational Vehicle Industry Association (RVIA)

RVIA believes that with the non-linear standards increase proposed, to achieve compliance, some manufacturers may opt to eliminate certain non-compliant vehicles from their product mix since compliance otherwise may not be technologically feasible. We are concerned that tow vehicles could be likely candidates for such eliminations since the cost of technology to achieve such abrupt improvements may diminish their commercial viability. To ensure that highway safety and air quality are not negatively impacted by RV owners who tow their RV trailers with undersized vehicles or keep older, less environmentally friendly tow vehicles on the road, we ask that you implement a more gradual rollout of the standards. [NHTSA-2009-0059-0107, p.5]

One of the key points found in the General Motors comments dated November 20, 2009, is that the '... the car standard detailed in the NPRM does not even 'encourage' limited product line manufacturers to increase vehicle fuel economy.' GM goes on to state,

'Because the NPRM curves require little improvement from cars and small trucks, there is a lost opportunity for fuels savings for the nation. As an example. increasing the stringency of the NPRM curves by 10% for the smallest vehicles and reducing the stringency by 5% for the largest trucks, would result in more energy savings, and enable more economically practical application of technology across the country.' [NHTSA-2009-0059-0107, pp.5-6]

Given that small cars are essentially already meeting the 2016 model year standards, such a trade off makes sense. RVIA would support such a measure and encourages a careful re-examination of the assigned mpg/C02 targets for both small vehicles and larger trucks. [NHTSA-2009-0059-0107, p.6]

EPA Response:

EPA believes that the standards for MY 2012-2016 are consistent with the Notice of Intent which stated that "*The standards for earlier years would begin with the 2012 model year, with a generally linear phase-in from MY 2012 through to model year 2016.*" Those standards likewise represent a reasonable exercise of EPA's authority under section 202 (a)(1) of the Act. See, e.g. section III.D of the preamble to the final rule; see also comment response 3.3.3.3.1. EPA acknowledges that the standards for passenger cars have a higher rate of increase from MY 2011 CAFE standards to MY 2012 GHG standards; however there are several reasons that this is a misleading comparison. First, the form of the 2011 standard (the footprint based curve) differs considerably from the

form of the MY2012-2016 standards. The baseline and reference fleets and many of the underlying technical assumptions used to approximate the fleet targets and stringencies for the 2011 rulemaking also differ from the ones used for this rule. The automotive industry commenters above do not point to a specific technical issue with the standards, but rather to their desire for a linear phase-in from the existing 2011 CAFE standards. These arguments are addressed in NHTSA's response to comments in their preamble IV and RIA. As to meeting the 2012 MY GHG standards, EPA notes further that the various flexibility mechanisms in the rule (e.g. TLAAS, early generation of credits for out-performing California standards, averaging, banking and trading with carry backward of credits if needed)) provide ready means for manufacturers to comply with the MY 2012 GHG standard. In one example of early credits, since the NPRM, it has come to light that some manufacturers may be implementing more air conditioner leakage reduction technologies than EPA had anticipated (see section III.C.1.a of the final preamble). This would result in additional early credits that could be carried forward to help meet 2012 standards. Because of these arguments, and due to the support for the phase-in of the standards from other stakeholders (including the California Air Resources Board) the agency is not making significant changes to the MY 2012-2016 GHG standards. For further discussion on the feasibility of the EPA standards, see section III.D of the final preamble.

3.3.3 Post 2016 standards

Organization: Sierra Club
Ford Motor Company
Northeast States for Coordinated Air Use Management
BMW of North America, LLC (BMW)
New York State Department of Environmental Conservation
State of Connecticut Department of Environmental Protection
Union of Concerned Scientists

Comment:

The industry, however, needs a longer term and stronger direction to be able to produce dramatically cleaner vehicles. We urge EPA to move swiftly to set standards that will apply to vehicles beyond 2017 and to consider a longer time horizon to ensure that lead time is not a constraint on the "technology forcing" authority EPA can exercise under the Clean Air Act. As soon as the endangerment finding is final, EPA will have the obligation to set standards for greenhouse gas pollutants that protect public health and welfare. To do this effectively, EPA should model where vehicle standards need to be in 2050 to achieve an 80% reduction (or the appropriate science-based emissions reductions needed) in vehicle emissions. Starting in 2017, EPA should give a clear "technology forcing" path to the auto industry. [OAR-2009-0472-7278.1, p.13]

A longer term approach is consistent with EPA's authority and statutory obligation under the Clean Air Act and with the analysis of the industry's ability to achieve higher standards in this NPRM. In this NPRM EPA considers three options. EPA identifies the annual 4.3% decrease in g/mi CO2e as the preferred option – the option that yields the 250 g/mi CO2 standard President Obama announced in May 2009. The agency considers a lower 4% and higher 6% option. EPA notes that that the 4% option 'forgoes CO2 reductions which can be achieved at reasonable cost." EPA also notes that this lower option would be too weak to achieve equivalence with California's Pavley [OAR-2009-0472-7278.1, p.13] standards and would, therefore violate the agreement. The 6% increase would increase the cost of a new vehicle by an average $500 with additional greenhouse gas reductions. EPA determines that this level is not "technically infeasible" but that it would be "overly stringent" given the condition of the industry and lack of lead time. EPA concludes that the preferred option demands enough of the industry in terms of technology change and cost. [OAR-2009-0472-7278.1, p.14]

EPA seeks comment on its judgment regarding the three options. In sum, EPA concludes that it "does not believe the 6% per year alternative would be an appropriate balance of various relevant factors for model years 2012–1016." We applaud EPA for ensuring that equivalence with California's standards are met in this first National Program, but urge the agency to ensure that its next standards do not leave greenhouse gas reductions and consumer savings unrealized. To do this EPA must look at the longer term and push the industry's best technologies into new cars and light trucks that both force technology forward and maximize their greenhouse gas potential. [OAR-2009-0472-7278.1, p.14]

NHTSA provides a slightly different approach to a range of from a 3% per year increase in fuel economy to 7% - but notes that the 4.3% preferred option achieves the 250 g/mi CO2 needed for equivalence with CA's program and yields a fleetwide average fuel economy of 34.1 mpg (equivalent to 250 g/CO2e). NHTSA, based on its statutory obligation to consider the need of the nation to conserve oil, concludes that weaker increases – 3 or 4% would "not produce the reductions in fuel savings and CO2 emissions that the Nation needs at this time." NHTSA's conclusion that weaker standards leave substantial benefits on the table is not matched by the rationale for picking the preferred option over the somewhat stronger choices. "NHTSA determined that it would be inappropriate to propose any of the other more stringent alternatives due" to lead time issues and "economically critical state of the industry." NHTSA diverges from past proposals which considered setting the standards at a level that maximizes societal net benefits. [OAR-2009-0472-7278.1, p.14]

Ford Motor Company

Above all, Ford strongly believes that measures need to be put in place to ensure that the national program approach outlined in this rulemaking continues beyond 2016. We were pleased when the President brought the stakeholders together to agree on a roadmap for harmonizing greenhouse gas emissions and CAFE standards at the federal level. The EPA and NHTSA proposal gives us greater clarity, certainty and flexibility to achieve the aggressive greenhouse gas emissions reduction goals that we all share. Most importantly,

it avoids the patchwork and overlapping requirements that we would have faced under the status quo. Nonetheless, it is only a first step, and it is critical that we avoid returning to the patchwork approach after 2016. We look forward to working with the same stakeholders toward a permanent national program for 2017 and beyond. [OAR-2009-0472-7082.1, Cover letter, p.2]

. Although the national program created by this rule covers the 2012-2016 model years, it is critical that measures be put in place to establish a permanent national program for the 2017 model year and beyond. [OAR-2009-0472-7082.1, p.1]

Northeast States for Coordinated Air Use Management

NESCAUM is very supportive of the proposed federal vehicle control program as a powerful first step in addressing GHG emissions from motor vehicles. However, additional reductions will be needed for vehicles beyond model year 2016. NESCAUM is committed to working with the EPA, NHTSA, the California Air Resources Board, and other stakeholders to address global climate change and the need to reduce oil consumption by developing strong motor vehicle GHG standards for model years after 2016. These additional reductions will be critical for the states in the Northeast to achieve their 2020 and 2050 GHG goals. [OAR-2009-0472-7235.1, p.7]

BMW of North America, LLC (BMW)

To ensure future regulatory stability for the auto industry while continuing to reduce greenhouse gas emissions and improve fuel fleet economy, BMW strongly recommends a comparable National Program in the model years beyond 2016. We are very, very happy with the way the negotiations, discussions, collaboration and cooperation have gone to come up with this single national standard and we very, very strongly support the same process for the years 2016 and beyond. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 132.]

New York State Department of Environmental Conservation

We do not believe that the 2016 model year standards proposed here represent the ultimate, lowest limit for light duty vehicle greenhouse gas emissions. We believe that lower emissions will be possible in the future without sacrificing the utility these vehicles provide their owners. We urge EPA and NHTSA to continue to evaluate the feasibility of more stringent regulations. We do hope the nation will not have to wait another 30 years for the next step. [OAR-2009-0472-7454, cover page 2]

State of Connecticut Department of Environmental Protection

Any standards developed for 2016 and later should comprehensively evaluate the need for and benefits of a multi-pollutant perspective, including criteria and air toxics along

with GHGs, that views vehicles and fuels as a system. Assuming additional standards are warranted, the next phase of light duty vehicle standards should view the transportation system in a holistic manner that takes into account vehicles, fuels and the transportation infrastructure that can be designed to enable greater levels of pollution or to minimize it. [OAR-2009-0472-7301, p.2]

Union of Concerned Scientists

Finally, I wanted to discuss the importance of establishing a strong regulatory framework for future rulemakings as part of this process. While the immediate focus of this rulemaking is achieving the President's goals through model year 2016, it will also set the precedent for future standards beyond that date. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 101.]

It is critical that future standards achieve the maximum feasible [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 101.] level of energy savings as required by EPAct and EISA as well as fulfill EPA's obligations under the Clean Air Act. Under this rulemaking, EPA and DOT have set standards that fall below the economically practicable levels indicated by the agencies' own analysis. This means that Americans will not realize the full benefits of the Nation Program through 2016. UCS recognizes that the current standards were set at a more modest level to help automakers achieve the standards given the financial problems facing the industry and the challenges of navigating a new regulatory structure. However, it's critical that future standards are set at levels that achieve the maximum benefits of the National Program. These standards should be based on sound modeling that uses accurate technology assessments, verified costs and transparent input. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 102.]

EPA Response:

EPA appreciates all of the comments expressing concern that 2017 and later GHG standards be set sufficiently soon so that the lack of available lead time does not limit the stringency of the standards. EPA is also sensitive to how complex and undertaking this will be and that a new National Program will provide a level of certainty for the manufacturers so that they may modify their long term product planning. We will consider these issues seriously as we proceed to evaluate post 2016 GHG standards for light-duty vehicles.

3.3.4 GHG Emissions Backstops

In the proposal, EPA and NHTSA recognized "that there is some possibility that low fuel prices during the years in which MY 2012-2016 vehicles are in service might lead to less than currently anticipated fuel savings and emissions reductions. One way to assure that emission reductions are achieved in fact is through the use of explicit backstops, fleet

average standards established at an absolute level." EPA stated that a backstop "could be adopted under section 202(a) of the CAA assuming it could be justified under the relevant statutory criteria." EPA did not propose backstop standards, but sought comment on possible backstop approaches.

EPA and NHTSA received many comments on backstops. In this section, EPA responds to both specific comments on GHG emissions backstops, as well as to general comments on backstops that were submitted to both EPA and NHTSA. In the latter case, where comments were made jointly on both EPA GHG emissions backstops and NHTSA CAFE backstops, EPA's response only addresses the issue of GHG emissions backstops.

EPA received 26 public comments on the issue of GHG emissions backstops. There is significant overlap among the comments on this issue, and the structure of this section is to provide a comprehensive sampling of excerpts of these 26 comments, followed by an EPA response to the comments organized into 3 sections:

- Whether EPA has the statutory authority to establish GHG emissions backstops
- Whether EPA should establish GHG emissions backstops
- Alternative backstop approaches to universal GHG emissions backstops

Organization: Alliance of Automobile Manufacturers (Alliance)
American Council for an Energy Efficient Economy
American Lung Association of California
Association of International Automobile Manufacturers (AIAM)
California Air Resources Board
California State Senate
Center for Biological Diversity
Connecticut Department of Environmental Protection
Environment Michigan
Environment New Jersey
Ford Motor Company
Mass Comment Campaign (2,322 comments) (unknown organization)
Mass Comment Campaign (326 comments) (Student PIRGs)
Massachusetts Department of Environmental Protection
National Automobile Dealers Association (NADA)
Natural Resources Defense Council
Northeast States for Coordinated Air Use Management (NESCAUM)
Public Citizen Safe Climate Campaign
Seal, Kathy
Sierra Club
State of New Jersey
Toyota Motor North America
Union of Concerned Scientists
United Auto Workers
University of Pennsylvania Environmental Law Project
Washington Department of Ecology

Comment:

Ford Motor Company

Backstops

Backstops should not be combined with attribute-based standards unless specifically required by statute. Backstops are inefficient and force manufacturers to produce vehicles that consumers may not want. Moreover, they are unnecessary. The sloped portion of the piecewise linear curves takes into account size based product mix differences across the industry and adjusts automatically for changes in vehicle size mix in response to economic conditions and consumer preferences. The flattened portion of the car and truck curves serves a function akin to a backstop by discouraging manufacturers from building larger vehicles. Moreover, NHTSA has commented in past rulemakings that the curve of an attribute-based standard has several features that limit backsliding. 74 FR at 14410. [OAR-2009-0472-7082.1, pp. 2-3]

GHG Backstops

EPA also seeks comment on the concept of 'backstop' standards for GHG emissions. In the NPRM, EPA proposes to establish motor vehicle GHG standards in the form of the 'C02 curves.' The authority and justification for the establishment of any additional 'backstop' standards underlying the CO2 curves is highly questionable. First, the Clean Air Act (CAA) § 202(a) does not mention the concept of 'backstop' standards, let alone authorize EPA to promulgate them. The concept of 'backstop' standards would involve promulgating two sets of standards (the main standards and the backstop standards) applicable to a given fleet of vehicles, and there is nothing in the CAA to suggest that Congress intended multiple 'layers' of standards to apply to vehicle emissions.

Second, EPA is presumably already taking the statutory criteria in § 202(a) into account in its development of proposed CO2 curves. Backstop standards would need to meet the same criteria, and the agency would need to conduct a separate evaluation of both the backstop standards on their own, and the combination of the backstop and main standards, under those criteria. However, it is far from clear that the § 202 criteria would support a second set of standards for the same vehicles. Backstop standards would likely impact individual manufacturers very differently. The most likely effect of backstop standards would be to prevent full-line manufacturers from building and selling vehicles that the market wants and that could otherwise be sold under the primary standards. This could have a significant financial impact on a few individual manufacturers most affected by the backstop standards, while having a negligible impact on overall projected concentrations of GHGs. A key purpose of the attribute based approach is to reduce the impact of vehicle mix and put manufacturers on a more level playing field; the addition of backstop standards would run counter to this goal. At present, the Administrator has no basis for concluding that backstop GHG standards are necessary to protect health and welfare. Given the potential costs and disparate competitive impacts that backstop

standards may impose on individual manufacturers, EPA should not pursue such standards.

Finally, as noted above, the intent of the joint EPA/NHTSA proposal is to ensure the greatest possible level of consistency between fuel economy standards issued by NHTSA and CO2 emission standards established by EPA. Even if EPA had the authority under the CAA to independently establish backstop standards, any EPA-issued CO2 emission standards would only serve to create new inconsistencies between the two programs, rather than further the goal of harmonization. Ford supports the harmonization of the EPA and NHTSA standards to the maximum extent possible, consistent with the Massachusetts v. EPA decision directing the federal agencies 'avoid inconsistency' in regulating greenhouse gas and fuel economy. The best way to 'avoid inconsistency' in this case is to allow NHTSA to establish the one backstop required by law for CAFE, and avoid any other backstops in the CAFE or GHG regulations. [OAR-2009-0472-7082.1, pp. 3-4]

Association of International Automobile Manufacturers (AIAM)

AIAM opposes the adoption of an additional "backstop" (i.e., minimum conventional) standard as a means of preventing market shifts toward larger vehicles. A backstop standard would defeat the purpose of the attribute format by limiting the flexibility of manufacturers to respond to shifts in market demand. Moreover, when Congress considered the need for a backstop standard in the similar context of CAFE standards under EISA, it adopted a limited "minimum standard" for domestic passenger automobiles. The EISA backstop provisions require that a manufacturer's domestic passenger auto fleet must comply with the greater of 27.5 mpg and 92 percent of the combined domestic/import average fuel economy of all manufacturers. See EISA, section 102(b)(4). An additional backstop standard in an EPA greenhouse gas regulatory program would be inconsistent with Congress' intent and would be unnecessary and inappropriate. [OAR-2009-0472-7123.1, p.18]

In Center for Biological Diversity v. NHTSA, the Ninth Circuit held that "neither the EPCA's language nor structure explicitly requires NHTSA to adopt a backstop." Rather, the court held that NHTSA had abused its discretion in failing to adequately consider the "need of the nation to conserve energy," as it was required to do under 49 USC § 32902(f), and did not show that a backstop would be technologically infeasible or economically impracticable. EISA did not expressly change this. The only backstops required are the requirements in EISA that the combined car-truck fuel economy values reach 35 mpg by MY2020 and that the regulations established between MY2011 and MY2020 increase ratably to that goal. So long as NHTSA makes the showing that the standards meet these requirements, then nothing more should be required in terms of a backstop. [OAR-2009-0472-7123.1, p.18]

[AIAM also submitted these comments as testimony at the Los Angeles public hearing. See docket LA EPA Hearing EPA-HQ-OAR-2009-0472-7283, pp. 28-32]

Alliance of Automobile Manufacturers (Alliance)

EPA's Backstop Authority

As noted above, the intent of the joint EPA/NHTSA proposal is to ensure the greatest possible level of consistency between fuel economy standards issued by NHTSA and CO_2 emission standards established by EPA. Even assuming EPA has the authority under the CAA to independently establish backstop standards, which is unclear, any EPA-issued backstopped CO_2 emission standards would only serve to create inconsistencies between the two programs, which would be contrary to the directive of the Supreme Court in *Massachusetts v. EPA* that federal agencies "avoid inconsistency" in regulating GHGs and fuel economy. *See Massachusetts v. EPA,* 549 U.S. 497, 532 (2007).

Because of differences between EPCA and the CAA, NHTSA's proposed CAFE rules include domestic and import passenger car fleets, while EPA's proposed GHG rules do not include the domestic/import distinction for passenger cars. Under EISA, as explained above, only the domestic passenger car fleet is subject to a backstop under the NHTSA CAFE rules. EPA cannot duplicate this under its rules; any "backstop" standards EPA might seek to promulgate would presumably apply to all passenger cars. Were EPA to proceed with such backstop standards, it would impose a new set of regulatory requirements on a group of vehicles (imported passenger cars) that are not affected by the backstop under NHTSA's rules. Such an outcome would only add to the complexity of the manufacturers' task of producing a fleet of vehicles that complies with both sets of rules. Furthermore, backstops are unnecessary. The concern about widespread vehicle upsizing and a loss of anticipated benefits from the proposed standards is greatly overstated given practical design considerations and the shape of the proposed attribute curves.

First, upsizing doesn't necessarily present an easier compliance path. The basic concern about upsizing is that manufacturers will be motivated to increase the footprint of their fleet since larger vehicles have a less stringent standard under a size-based attribute system. This premise ignores that an increase in vehicle footprint typically results in an increase in vehicle weight. While upsizing may relax the fuel economy target, compliance may be just as difficult due to the loss of fuel economy from the added weight.

Second, increasing vehicle footprint may require vehicle platform changes. The opportunity to upsize a vehicle platform is limited by product planning cycles which have already been finalized in many cases for basic attributes such as vehicle size. Further, changes in vehicle footprint and platform present practical design considerations such as vehicle styling and vehicle dynamics/handling. Lastly, these platform changes are not without cost.

Third, any erosion of the anticipated benefits is likely to be minimized by the substantial yearly increase in the target curves as well as the shape of the curves for any given year. For example, under the proposed standards, the efficiency of a car fleet with an average

footprint of 45 sq ft is required to improve by 13 percent between 2012 and 2016. To completely negate this improvement, the footprint for every vehicle in this example fleet would have to be increased by an average of 7 sq ft over that 4-year period. For all of the technical reasons mentioned above, such a scenario is highly unlikely, if not impossible. Upsizing the footprint by even half this amount, while still not a reasonable scenario, would net significant fuel economy improvements. In fact, a backstop is already built into the standard curves to the extent the targets become constant or "clipped" as vehicle footprint continues to increase. Therefore, the target curves already help guard against any loss of benefit from theoretically upsizing into the "clipped" regime.

From a policy perspective, a backstop introduces an unnecessary secondary standard that increases the complexity of the requirements and runs contrary to the intent of an attribute-based standard. For these policy reasons and in keeping with the Supreme Court's admonishment to "avoid inconsistency," EPA should not seek to adopt backstop standards. [OAR-2009-0472-6952, pp 35-36]

Backstop Standards

The agencies note that NHTSA is required to set minimum "backstop" standards for domestically-manufactured passenger cars and request comment on whether "backstop standards, or any other method within the agencies' statutory authority, should and can be implemented in order to guarantee a level of CO2 emissions reductions and fuel savings under the attribute-based standards" for other categories of vehicles. Proposed Rulemaking To Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Proposed Rule, 74 at 49,493. [OAR-2009-0472-6952.1, p.37]

The agencies have not established that they have authority to set back-stop standards that are not specifically authorized by Congress, and the Alliance is aware of no evidence indicating that such back-stops are necessary to achieve the goals and purposes of the national fuel economy and emissions programs. Such back-stops would unduly limit consumer choice and the industry's ability to achieve the goals of the new national programs as cost-effectively as possible. [OAR-2009-0472-6952.1, p.37]

Toyota Motor North America

Anti-Backsliding Standards

Anti-backsliding or backstop standards currently apply only to the domestic passenger fleet under NHTSA's CAFE program. The Agencies request comment on whether anti-backsliding provisions should be expanded to all vehicle fleets covered by the proposed NHTSA and EPA standards. NHTSA additionally proposes to revise the domestic car anti-backsliding standards that were set in the March 2009 final CAFE rule for 2011 MY. Finally, NHTSA proposes to use projected target fuel economy when establishing the minimum CAFE standard for the domestic passenger fleet. [OAR-2009-0472-7291, pp.14-15]

Expanding Anti-Backsliding Standards to All Cars and Trucks

Toyota opposes any expansion of anti-backsliding provisions beyond the domestic passenger car fleet in the CAFE program. The clear intent of Congress has been that NHTSA should only establish anti-backsliding standards for the domestic car fleet. As such, EPCA requires NHTSA to establish anti-backsliding standards for domestic passenger cars and does not authorize NHTSA to establish additional anti-backsliding standards for import cars and trucks. [OAR-2009-0472-7291, p.15]

In the case of EPA and CAA, there is no explicit statutory authority that either compels or authorizes EPA to establish anti-backsliding standards for any class of light-duty vehicle. While EPA's authority may be ambiguous, it is clear that any EPA-issued anti-backsliding standards would create new inconsistencies between the NHTSA and EPA programs, rather than support the goal of harmonization. NHTSA anti-backsliding standards are limited to domestic passenger cars, and the CAA cannot be used to duplicate a similar outcome since EPA's fleet definitions do not distinguish between domestic cars and import cars. The most 'harmonized' outcome is for NHTSA to proceed with the required domestic car anti-backsliding standard for the CAFE program, and for EPA to forego any attempt to set anti-backsliding standards under the CAA. [OAR-2009-0472-7291, p.15]

Notwithstanding the legal constraints described above, anti-backsliding standards are unnecessary. The concern about widespread vehicle upsizing and a loss of anticipated benefits from the proposed standards seems overstated given practical design considerations and the shape of the proposed attribute curves. [OAR-2009-0472-7291, p.15] [See OAR-2009-0472-7291, pp.15-16 for more discussion on this issue]

Northeast States for Coordinated Air Use Management (NESCAUM)

NESCAUM urges EPA and DOT to include a backstop mechanism for the standards. The shift in the market away from cars towards light trucks in the 1990s resulted in a decrease in the U.S. fleet average fuel economy. More recently, there has been a dramatic shift in the market towards 4 and 6 cylinder engines and away from 8 cylinder engines. This has been accompanied by a shift away from larger trucks and towards smaller trucks and cars. The technical analysis conducted for this proposal by EPA and DOT assumes that this trend will continue. Should there be a shift back toward higher CO2 emitting vehicles (as was the case in the 1990s) the emissions reductions projected by the agency could be greatly overestimated. A backstop which sets a floor for reductions would address this potential problem. NESCAUM also urges the agencies to revisit the GHG standards and incorporate changes in the light-duty vehicle fleet into baseline assumptions. NESCAUM believes this is an important element to include in the final rule. We encourage the agencies to revisit and revise the light-duty GHG standards to correct for mistaken future projections. [OAR-2009-0472-7235.1, p.6]

Public Citizen/Safe Climate Campaign

Reaching the agency's proposed standard of 250 g CO2/mi is predicated on the fleet mix of 67 percent cars and 33 percent light trucks in 2016, versus a fleet mix of 51 percent cars and 49 percent light trucks in 2008. Some of this shift in the market will result from the reclassification of a large number of vehicles that were previously categorized as light trucks to passenger cars, which will take effect in the 2011 model year, consistent with the final rule for 2011 fuel economy standards. Many of these affected vehicles are two-wheel drive versions of vehicles that are also sold in a four-wheel drive configuration. [OAR-2009-0472-7050.1, p.2]

This creates a problem for automakers in manufacturing and marketing these vehicles. Automakers would have to build a two-wheel drive version of a vehicle to fit on the "car curve" or meet the footprint-based target for fuel economy set for the passenger car fleet versus the light truck fleet. There is significant overlap of footprints which are on both curves. If automakers successfully build two-wheel drive versions that get the better fuel economy required on the car curve, it calls the two-fleet rule into question. Automakers may respond to reclassification by simply ceasing to offer two-wheel drive configurations of certain SUVs, which would distort the fleet mix and ultimately result in lowering fuel economy and raising greenhouse gas emissions. [OAR-2009-0472-7050.1, p.2]

For this reason, the new standards should include backstops, or some other adjustment mechanisms to ensure that there is a firm level below which individual automakers and the economy-wide [OAR-2009-0472-7050.1, p.2] fleet of vehicles could not fall. The agencies already build in an expectation value based on analysis of the extent to which it is estimated that automakers will apply credits. EPA discusses several backstop options in its Advanced Notice of Proposed Rulemaking (ANPRM) on greenhouse gas regulation under the CAA. An approach that EPA outlines that could be most effective would have the standards automatically reset to account for increases in emissions that are inconsistent with agency projections at the time of promulgation: [OAR-2009-0472-7050.1, p.3]

For example, at the time of promulgation, EPA could assume a certain average industry-wide carbon dioxide g/mi emissions level for 2011–2012. If, in 2013, EPA found that the average industry-wide emissions level in 2011–2012 was higher than projected in the final rule (and therefore the carbon dioxide emissions reductions were lower than projected because of higher than projected average footprint levels), then the backstop provisions would be triggered and the footprint curves for future years (say, 2016 and later) would be automatically changed to be more stringent and/or flatter in shape. This approach would reframe the backstop issue in terms of industry-wide emissions performance, rather than in terms of individual automaker emissions performance. [OAR-2009-0472-7050.1, p.3]

A mechanism similar to this would prevent greenhouse gas emissions from rising because of unanticipated shifts in the fleet mix. We urge EPA and NHTSA to adopt backstops for greenhouse gas emissions and oil consumption to ensure that the goals of the program are met, and to discourage manufacturers from continuing to use the light truck loophole to

undermine advances in fuel economy and reductions in greenhouse gas emissions. [OAR-2009-0472-7050.1, p.3]

Union of Concerned Scientists

Given the possibility that a fleet average of 250 g/mi may not be reached – either by renewed interest in light trucks or by industry gaming of light truck classifications – it is critical that the agencies add a backstop in order to guarantee that the President's emissions reductions and energy savings goals are met. While a backstop could take numerous forms, UCS suggests one that includes an automatic re-computation or "ratchet" of stringencies for subsequent years, such that the National Program's cumulative emissions reductions and oil savings goals are fully achieved in 2016, even if falling short in early years of the program. [OAR-2009-0472-7181.1, p.5]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.103-113 (p.6)]

First, a backstop is necessary to meet California's standards. By 2016, new cars under the California program are expected to emit an average of 250 grams per mile of global warming pollution.

To meet this level of emissions, the NPRM projects that in model year 2016 the fleet will consist of approximately two-thirds passenger cars and one-third light trucks. But in today's new vehicle fleet, nearly half of the vehicles sold in the U.S. are light trucks.

While there has been a recent market trend away from light trucks towards cars, it is questionable whether market pressure alone will achieve such an overall notable shift by 2016. Additionally, automakers might strategically redesign vehicles in some classes so they might meet higher emissions limits.

EPA and NHTSA should include a backstop in the final regulations to ensure that the fleet-wide standards are achieved in each model year and that by 2016 the fleet average is indeed 250 grams per mile.

[Union of Concerned Scientists also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, pp. 95-98.]

Natural Resources Defense Council

GHG Standards Need "Backstop" Standards to Ensure Environmental Objectives Are Not Undermined by Shifts in Sales Mix
The proposed GHG standards lack a regulatory "backstop" mechanism to ensure the National Program goals for model year 2016 fleetwide average emission levels and the cumulative greenhouse gas and oil consumption reductions are met (see section I for the list of program goals). Such mechanisms are necessary because under an attribute-based system that has separate car and light truck standards, the fleet sales mix could shift to larger, higher-emitting vehicles and to a greater proportion of light trucks, resulting in

greater fleetwide emissions and oil consumption thus undermining the achievement of the program goals. [OAR-2009-0472-7141.1, p. 8]

In the proposal, the agencies recognize that attribute-based standards of the proposed standards do not guarantee that specific fleetwide GHG emission and fuel economy levels will be achieved. Achieving the pollution and oil reduction goals of the program are dependent on the overall market achieving the agencies' forecasted sales and size mixes. To reach a fleetwide average of 250 g/mi in model year (MY) 2016, the agencies have set the individual car and light truck standards on the assumption of a specific car/light truck sales split. However, if the automakers shift their product mix to more light trucks or if they change the vehicle designs to classify fewer models as cars and more models as light trucks, this car/light truck split would be changed and the GHG and oil savings goals of the program would be undermined. This is of particular concern since the agencies' forecast assumes a substantial increase in car sales share, from today's 50.3 percent to 66.5 percent by MY 2016.5 Starting in MY 2011, 2WD SUVs will be reclassified as cars, which could potentially increase the car portion by 10 percent. However to avoid the reclassification, automakers could simply cut back their 2WD SUV offerings. As a consequence, the car sales share could be lower than forecast and the National Program's GHG and oil reduction goals would be missed. [OAR-2009-0472-7141.1, pp. 8-9]

To prevent intentional and unintentional market shifts from undermining the environmental and oil savings benefits of the Program, we recommend EPA and NHTSA adopt manufacturer-specific backstop combined car and light truck standards that bar an individual automaker from exceeding its forecast GHG emission levels by more than 2 gCO2-equivalent/mi (henceforth referred to as gCO2e/mi). Manufacturer-specific backstop standards would ensure that specific manufacturers can be held accountable if the overall fleet emission targets are missed. A manufacturer should be allowed no more than three years to make up any exceedance in its manufacturer-specific backstop standard. [OAR-2009-0472-7141.1, p. 9]

[NRDC also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 20-21.]

American Council for an Energy Efficient Economy

The rule should include a provision to ensure that savings are not substantially undermined by discrepancies between the future vehicle market and the vehicle market projected by the agencies. The extent to which the standards could promote upsizing or downsizing of vehicles depends in part upon the shape of the attribute curve. In reducing the steepness of the car curve, the agencies have reduced the incentive to upsize vehicles, because upsizing a vehicle will not increase the emissions target enough to offset the natural tendency of the larger vehicle to consume more fuel (although some distortion of the market through wheelbase manipulation could still occur). At the same time, the new standard is not flat enough to promote downsizing, except at the upper and lower ends of the size spectrum, which covers a negligible percent of vehicle models.

The better choice of slope does not however address the issue of car/truck split, which presents perhaps the principal way in which the rule could fail to deliver the promised emissions reductions. If, for example, instead of reaching 67 percent of the market in 2016 as the agencies predict, cars remain at the 58 percent share projected for 2011, savings attributable to the 2016 standards would be more than 10 percent less than the agencies have claimed.

ACEEE recommends the addition of a "ratchet" mechanism that automatically increases the stringency of standards across the board, should emissions reductions fall below a predetermined percentage of projected reductions. Such a mechanism would be completely compatible with the flexibility offered by an attribute-based system. The need for a backstop will be even more evident if the agencies' approach to setting the level of standards is changed to reflect the need to achieve certain levels of GHG emissions, as ACEEE recommends.

Recommendation: Set an upper bound for the level of emissions and fuel consumption that can be associated with new light-duty vehicles in a given year. Any exceedence of that amount should result in an automatic tightening of the standard to ensure that vehicles in the next year will achieve the intended reductions.

[ACEEE also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, p. 139.]

California State Senate

I would like the EPA and DOT to develop polices to ensure this program meets its stated goals. For example, what happens if a carmaker fails to meet your requirement and can't meet the 2016 target? We are counting on you to achieve the emissions reductions and oil savings that we expect from this rule. [OAR-2009-0472-7275.1, p.5]

[Fran Pavley also submitted these comments as testimony at the Los Angeles public hearing. See docket LA EPA Hearing EPA-HQ-OAR-2009-0472-7283, pp. 13-20]

Sierra Club

Both agencies should include a backstop in the final rule and we welcome the opportunity to comment on this essential element of a strong program. We are concerned that the joint proposal's reliance upon attribute-based curves, whose efficacy will vary with the composition of the fleet, imperils the President's goal of "establishing consistent, harmonized, and streamlined requirements" to reduce greenhouse gas emissions and improve fuel efficiency. We suggest adopting a backstop rule to prevent shifts of fleet composition from undermining the standards and now renew that recommendation. A backstop will address weaknesses in the attribute based system and problems that may arise with credits – making sure the program stays on course. [OAR-2009-0472-7278.1, p.3]

EPA Response to Comments

But the attribute approach, on its own, is imperfect for at least two substantial reasons: First, the ultimate effect of the curves is dependent upon the fleet mix. Both agencies have assumed a MY 2016 sales fleet mix of 67% cars and 33% trucks, which is a dramatic shift from the current 50/50 fleet mix. If assumptions regarding fleet mix underestimate the number of larger vehicles sold, then net benefits across the curves will be smaller than estimated. According to the Union of Concerned Scientists, a more truck heavy fleet mix (42%) would miss the 250 g/mi target by 7 g/mi or nearly 1 mpg and if the fleet mix in 2016 is similar to today's mix, the standard will be missed by 13 g/mi or as much as 1.7 mpg. [OAR-2009-0472-7278.1, p.3]

Second, because the attribute curves for light trucks are set at consistently less ambitious levels than those for cars, manufacturers have a strong incentive to attempt to classify their cars as 'light trucks', thereby escaping the more stringent car curves. As we documented in our July 1, 2008, comments on NHTSA's then-proposed 2011-15 vehicle standards, several common vehicles, including the PT Cruiser and Subaru Outback, have been so misclassified. While many two-wheel drive compact SUVs will be reclassified beginning in MY 2011, manufacturers may opt to shift compact two- [OAR-2009-0472-7278.1, p.3] wheel drive SUVs to a 4-wheel drive platform keep them on the truck curve, affecting the outcome of the program. [OAR-2009-0472-7278.1, p.4]

To ensure that we achieve 250 g/mi and 34.1 mpg in MY 2016, both agencies should include manufacturer-specific, automatic ratchet 'backstops' – essentially hard fleetwide limits that would undergird the attribute curves, thereby accounting for fleet mixes and classifications that had not been predicted. The proposed rule recognizes the potential of backstops, acknowledging that "[o]ne way to assure that emissions reductions are achieved is through the use of explicit backstops, fleet average standards established at an absolute level." Another option would be to require automakers who miss the 2016 targets make up that difference with banked credits. Banked credits would be turned into EPA and NHTSA and therefore retired from the system and make up for shortfalls. Yet, both EPA and NHTSA fail to adopt this simple fail-safe approach save for in the limited case of mileage standards for domestic cars. We urge the agencies to reconsider this choice. Below are detailed comments on both agencies authority to adopt backstop standards. [OAR-2009-0472-7278.1, p.4]

The Clean Air Act affords EPA broad discretion to shape its rulemakings to be as effective as possible. Section 202(a) of the Act provides that EPA shall propose "standards applicable to the emission of any air pollutant from any class of classes of new motor vehicles or new motor vehicle engines, which in [EPA's] judgment cause, or contribute, to air pollution which may reasonably be anticipated to endanger public health or welfare.28 It gives EPA significant authority to prescribe the precise form of these standards, as the proposed rule rightly states.29 So, as the proposed rule states, "[a] backstop . . . could be adopted under section 202(a) of the [Clean Air Act]."30 EPA has already described the acute dangers of allowing continued increases in greenhouse gases in its proposed endangerment and cause or contribute findings.31 Given that the statute's "primary goal" is "pollution prevention," (42 U.S.C. §7401(c)), EPA should be taking every measure to ensure that its proposed rule successfully drives reductions in the

vehicular greenhouse gas emissions it has identified as an acute threat to public health and welfare.

EPA's prior work on setting greenhouse gas standards for vehicle referenced a possible "automatic ratchet." EPA should determine what appropriate annual targets for cars and light trucks would be based upon a steady increase to meet the 2016 standards – and, indeed, it has already done this in the process of developing its attribute-based curves. Second, EPA would include a 'ratchet' mechanism in the rule that worked as follows: At the end of every year, EPA would determine whether the actual fleet produced in that year was consistent with its original predictions. If not, EPA would automatically revise the attribute-based curves for the next year to make up the difference. Manufacturers would respond by either meeting the new standards directly or by disgorging any credits they had earned through over-compliance in past years. In this way, the 'backstop' acts solely through adjustments in the attribute-based curves.

For the reasons we have already discussed in these comments, backstop standards help ensure that EPA's goals will be met, acting to buffer the attribute-based curve system from unanticipated problems. EPA should adopt this valuable tool. It is, moreover, particularly important the EPA do so if NHTSA ultimately does not. Because EPA's rules intertwine with NHTSA's, EPA could be badly undermined if neither it nor NHTSA put a backstop in place. In sum, backstop standards are not hard to write and, if the system functions properly, may never need to be implemented. They are a valuable form of low-cost insurance, available to both agencies as they work to help America solve the "urgent and closely intertwined challenges of energy independence and global warming."

28 42 U.S.C. § 7521(a)(1).

29 *See* 74 Federal Register at 49,464 (collecting cases, including *NRDC v. EPA*, 655 F.2d 318 (D.C. Cir. 1981)).

30 74 Federal Register at 49,493; *see also id.* at 49,513 (describing, correctly, EPA's broad authority to design effective rules).

31 *See generally* 74 Federal Register 18,886 (Apr. 24, 2009) at 49,458. We urge EPA and NHTSA to take the prudent course and put manufacturer specific, automatic ratchet backstops in place.

[See docket number [OAR-2009-0472-7278.1, pp.10-11]

[Sierra Club also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, p. 27.]

United Auto Workers

The EPA requested comments on the desirability of establishing alternative backstop standards for greenhouse gas emissions. The UAW believes that this is undesirable and

unnecessary. Doing so would jeopardize the carefully crafted harmonization the agencies have achieved under these proposed regulations, eliminating or severely limiting the benefits of a unified national program and raising the cost of any particular level of regulation. [OAR-2009-0472-7056.1, p.2]

California Air Resources Board

The agencies sought comment on whether a backstop should and can be implemented to guarantee emission reductions from these attribute-based standards. CARB strongly urges the EPA to include a backstop measure in the final rule. The fleet composition in model year 2008 – the baseline model year used by the agencies to project fleet composition in future years – demonstrated a significant shift in consumer preference to smaller, more efficient passenger cars due to an unforeseen increase in fuel prices and a declining economy. This shift in consumer preference was also noticeable in the recent "cash for clunkers" program. Additional uncertainties in the analysis of future fleet composition include: the methodology used by the agencies to project future fleet composition; the impact of early credits; future oil prices; and the impact of changing economic conditions. A backstop measure would provide assurance that, regardless of any unforeseen changes in fleet mix, the GHG emission reductions expected from the program would be achieved.

Contrary to the Alliance's argument (Document ID EPA-HQ-OAR-2009-0472-6952.1), Massachusetts et al. v. EPA said very little about EPA's and NHTSA's respective duties, did not direct the agencies to avoid inconsistency, and does not preclude EPA from promulgating a backstop. 549 U.S. 497, 532 (2007). Rather, the Court merely stated that the agencies could fulfill their respective obligations while avoiding the inconsistency. This nuanced distinction is important, as the Central Valley and Green Mountain further delineated those obligations and found that EPA can fulfill its public health and welfare mandate – which a backstop could serve to ensure – while NHTSA fulfills its fuel economy mandate.

In addition, the Alliance's practical considerations, suggesting a backstop is unnecessary, are less than reassuring. First, manufacturers can increase vehicle footprints and offset their supposed increased weight penalty by down weighting. Second, manufacturers need not change vehicle platforms mid-stream if their sales were originally targeted to larger vehicle models than those estimated in the joint proposal. Third, their extreme case of offsetting any increase in car efficiency by increasing vehicle footprint is a red herring; backstops typically under discussion instead are proposed (as noted above) to preserve the greenhouse gas reductions envisioned for this program should any unforeseen changes in fleet mix occur. So rather than rely on an industry that has deftly exploited regulatory loopholes and marketing tricks to sell larger and heavier vehicles, EPA has an opportunity to ensure that the greenhouse gas emissions it is mandated to achieve actually come to fruition. [OAR-2009-0472-7189.1, pp.3-4]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

Center for Biological Diversity

The Proposed Rule Should Include Backstops to Assure That Minimum Mileage and GHG Emission Standards Are Met

As the court in *Center for Biological Diversity* determined, although EPCA does not explicitly require a backstop to assure that minimum feasible average fuel economy standards are met for each model year, the Agencies cannot act arbitrarily or capriciously in not adopting a backstop. *Id.*, 508 F.3d at 537-538. *See also* 49 U.S.C. § 32902(a)(6). Moreover, voluntary non-compliance with air pollution standards set under the Clean Air Act is not permitted.
Proposed Rule, 74 Fed. Reg. 49522. In other words, the failure to meet a minimum "backstop" pollution standard violates the CAA. Here, the Proposed Rule contemplates so many credit swaps, special programs and other loopholes that it cannot predict what fuel efficiency standard or GHG emission standard will actually be met in any given year....This outcome is impermissible under *Center for Biological Diversity*, 508 F.3d at 537-539. The Agencies should set backstops or eliminate all loopholes, credits and other mechanisms that allow minimum standards to be flouted. [OAR-2009-0472-7265.1, p. 18]

National Automobile Dealers Association (NADA)

EPA should defer to the CAFE program by not incorporating backstops into its GHG rules and by clarifying that it will adjust its mandates as necessary should initial feasibility and practicability calculations prove too ambitious. Any failure to do so would undermine the concept of a single National Program and, helping to prove the above-stated contention that the issuance of a duplicative EPA standard makes little sense. [OAR-2009-0472-7182.1, p.7]

Non-CO2 light-duty GHGs effectively are regulated by CAFE and, to some extent, even by existing tailpipe standards. In light of their de minimis global warming potential compared to CO2 separate standards/backstops for non-CO2 GHGs are unnecessary and would be redundant. [OAR-2009-0472-7182.1, p.7]

Connecticut Department of Environmental Protection

First, DEP supports the proposed emissions standards as cost effective and technically feasible. DEP also supports the use of flexible individual manufacturer compliance plans as a cost mitigation policy, but believes such plans must- ultimately provide the anticipated fuel savings and GHG emission reductions benefits associated with the proposed rules. In the event that manufacturers default to widespread vehicle upsizing as a compliance strategy, the proposed rules should consider a trigger under which a back stop framework (either under the Clean Air Act, or the Energy Independence and Security Act) would be implemented. Lacking such a critical assurance, DEP believes future coordination among the states, the federal government and vehicle manufacturers in the post 2016 timeframe will be difficult to maintain. [OAR-2009-0472-7301, p.2]

State of New Jersey

In several places throughout the proposal, the Agencies request commenter input on their determination to use attribute-based standards. While we understand why the Agencies determined to rely on attribute-based standards when establishing the federal motor vehicle control program, the Department is concerned with the attribute-based approach. By allowing manufacturers to meet less stringent fuel economy standards through expanding the vehicle's footprint, the attribute-based approach could encourage manufacturers to produce larger vehicles.

If this were to occur, the greenhouse gas reductions from the proposed standards may not be achieved. In addition, the impact of the civil penalty of $5.50 for each tenth of a mile per gallon is negligible for the manufacturers of trucks with larger footprints. These concerns could result in manufacturers * shifting to produce larger vehicles, which would significantly lessen the estimated greenhouse gas reductions estimated from the implementation of this proposal.

Because of these and other potential concerns, the Department recommends that the Agencies establish a backstop measure in its final rulemaking to preserve the estimated reductions in greenhouse gas emissions. The backstop could state that a certain fraction of the estimated greenhouse gas emission reductions based on the current fleet mix must he achieved under these rules or the backstop measure would become effective. [OAR-2009-0472-7109.1, p.5]

Massachusetts Department of Environmental Protection

Shift of Light-Duty Trucks into the Car Category :A key element of the proposed rulemaking is that the increase in MPG and reduction in carbon emissions will be partly achieved by shifting most two-wheel drive SUV's into the car category, thereby falling under a requirement for higher MPG and lower carbon emissions. Thus, it is projected that cars, which are now around 50% of new car sales, will rise to 67% of such sales through this adjustment. However, it would be a relatively simple matter for manufacturers to avoid this shift by selling more four-wheel drive SUV's relative to two wheel-drive vehicles, and to provide consumers with incentives to make such purchases. Should this happen, the proportion of light-duty trucks in the fleet might not fall nearly as much as EPA and NHTSA are projecting, and overall MPG could be substantially worse than the projections in the proposal.

Massachusetts believes that EPA and NHTSA should take whatever steps are necessary to prevent such a result. One way to do this would be to have a 'backstop' or re-calculation of the MPG and emission requirements every couple of years, so that if the fleet mix contains a higher proportion of light trucks than is currently forecasted, then separate requirements on both categories would be tightened. If this backstop were adopted in the final regulations, it could remove any incentive for the manufacturers to encourage shifts from two-wheel to four-wheel drive sales, thereby forestalling the need to implement the tightened standard.

[OAR-2009-0472-7195.1, p.2]

Washington Department of Ecology

Second, history shows that efficiency and emissions reduction gains from motor vehicle emission control can be offset by changes in the fleet mix between passenger cars and light duty trucks. For example, the shift from cars to SUVs increased smog-forming emissions and led California and EPA to adopt uniform emission standards for most passenger vehicles. Ecology urges EPA and NHTSA to consider a potential backstop mechanism to preserve the projected GHG reductions over time should the future fleet mix change significantly. [OAR-2009-0472-7299, p.2]

Mass Comment Campaign (2322, unknown organization)

The best defense would be the establishment of a 'backstop' to preserve oil savings and greenhouse gas reductions projected under this program. [OAR-2009-0472-5747, p.1]

University of Pennsylvania Environmental Law Project

Another significant problem with the proposed rule is that it is based on uncertain projections of future vehicle footprints, vehicle fleet composition, miles driven, and other relevant variables. While it is obviously unavoidable to base the policy on uncertain future outcomes to some degree, the policy does not guarantee any reduction in greenhouse gas emissions. While it is desirable to maintain a degree of flexibility, it is also essential that greenhouse gas emissions are significantly curtailed. Thus, the policy should create mechanisms whereby minimum reductions are ensured, even if the projections turn out to be in significant error. [OAR-2009-0472-7286.1, p. 18]

American Lung Association of California

The American Lung Association of California urges the federal EPA to move forward to adopt the proposed Clean Cars standard, and to adopt the strengthening changes recommended by the Natural Resources Defense Council and the Union of Concerned Scientists. These recommendations include: 1) add an automaker specific backstop to ensure that the expected level of greenhouse gas emissions reductions are achieved. [OAR-2009-0472-7216, p. 2]

Environment Michigan

[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 69.]

In addition to addressing these specific issues, we urge you to include a backstop in the program that will ensure that the program meets the President's goals for reducing pollution and saving oil.

Environment New Jersey

And then, finally, we definitely want to make sure there is a backstop in the program to make sure the program meets the President's goals for reducing pollution and saving oil. [EPA-HQ-OAR-2009-0472-4621, p.76]

Citizen Kathy Seal

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, p.148]

Please consider also the backstop measures to ensure that industry stays on track, the backstop measures that I believe other people have already described today on the panels.

Mass Comment Campaign (326, Student PIRGs)

President Obama has promised that the standards will cut carbon dioxide pollution by 950 million metric tons and oil use by 1 .8 billion barrels of oil over the lifetime of the vehicles sold under the program. However, the proposed standards include loopholes that put these goals at risk. To ensure that the President's goals for reducing pollution and cutting oil use are met, please include a backstop in the final rule. [EPA-HQ-OAR-2009-0472-11293, p. 1]

EPA Response:

Whether EPA Has the Statutory Authority to Establish GHG Emissions Backstops

EPA received only a few comments that directly address the question of whether EPA has the statutory authority to establish one or more GHG emissions backstops. Ford claimed that EPA's statutory authority is "highly questionable," with its main legal arguments being that the Clean Air Act does not mention the concept of backstop standards, and that backstop standards would yield "two sets of standards" and that "there is nothing in the CAA to suggest that Congress intended multiple 'layers' of standards to apply to vehicle emissions." The Alliance of Automobile Manufacturers stated that EPA authority was "unclear." Toyota stated that "EPA's authority may be ambiguous."

On the other hand, Sierra Club emphasized EPA's "broad discretion" under the CAA and argued that EPA does have the authority to establish GHG emissions backstops. Many other commenters (see next section) that endorsed GHG emissions backstops presumably believe that EPA does have statutory authority in this area, though they did not address the legal arguments.

EPA agrees with the Sierra Club and strongly reaffirms its position from the proposal that EPA has the discretion to adopt GHG emissions backstops, where appropriate in light of the factors relevant under section 202(a)(1).

Whether EPA Should Establish GHG Emissions Backstops

Most of the comments that EPA received on backstops pertained to whether EPA should or should not adopt GHG emissions backstops.

Many commenters supported the establishment of GHG emissions backstops: Northeast States for Coordinated Air Use Management, Public Citizen/Safe Climate Campaign, Union of Concerned Scientists, Natural Resources Defense Council, American Council for an Energy Efficient Economy, California State Senator Fran Pavley, Sierra Club, California Air Resources Board, Center for Biological Diversity, Connecticut Department of Environmental Protection, State of New Jersey, Massachusetts Department of Environmental Protection, Washington Department of Ecology, University of Pennsylvania/Environmental Law Project, American Lung Association of California, Environment Michigan, Environment New Jersey, and citizen Kathy Seal. EPA also received short, "mass comments" from over 2000 private citizens supporting GHG emissions backstops. The primary argument of supporters was that backstops were necessary, as stated by the Natural Resources Defense Council, "to prevent intentional and unintentional market shifts from undermining the environmental and oil savings benefits of the Program." The most common concern cited by many of the commenters was that the proposed truck footprint curves yield higher GHG emissions targets than the car footprint curves, for the same footprint values, and that this could lead some manufacturers to consider changes to increase truck market share and decrease car market share. Doing so would decrease the overall GHG savings associated with the standards. In addition, some commenters stated that manufacturers might build larger vehicles ("upsize") than EPA projects, for example, because any amount of slope in target curves could encourage manufacturers to upsize.

Some commenters were opposed to GHG emissions backstops: Ford Motor Company, Association of International Automobile Manufacturers, Alliance of Automobile Manufacturers, Toyota Motor North America, United Auto Workers, and the National Automobile Dealers Association. Opponents of backstops argued that upsizing was unlikely and emphasized the anti-backsliding characteristics of the target curves (i.e., the Alliance of Automobile Manufacturers and Toyota said that upsizing would not necessarily make compliance with applicable standards easier, since larger vehicles tend to be heavier and heavier vehicles tend to achieve worse fuel economy/emissions levels). Backstop opponents also claimed that universal backstop standards could restrict consumer choice of vehicles. Finally, opponents argued that if EPA were to adopt backstop standards while NHTSA did not, this would create "new inconsistencies between the two programs, rather than further the goal of harmonization" (Ford Motor Company).

EPA is not finalizing GHG emissions backstop standards for the following reasons.

One, EPA is confident that our projections of the future fleet mix are reliable, and that future changes in the fleet mix of footprints and sales as a result of this rule are not likely to lead to more than modest changes in projected GHG emissions reductions. The

agencies acknowledge that based on economic and consumer demand factors that are external to this rule, the distribution of footprints in the future may be different (either smaller or larger) than what is projected in this rule. However, the agencies continue to believe that there will not be significant shifts in this distribution as a direct consequence of this rule.

As explained elsewhere in the rulemaking documents, EPA's projections of the future fleet are based on the most transparent information currently available. Moreover, recent market trends are consistent with EPA's future fleet projections, showing shifts from light trucks to passenger cars and increased emphasis on higher fuel economy and lower greenhouse gas emissions. For example, NHTSA's March 2009 final rule establishing MY 2011 CAFE standards was based on a forecast that passenger cars would represent 57.6 percent of the MY 2011 fleet, and that MY 2011 passenger cars and light trucks would average 45.6 square feet (sf) and 55.1 sf, respectively, such that average required CAFE levels would be 30.2 mpg, 24.1 mpg, and 27.3 mpg, respectively, for passenger cars, light trucks, and the overall light-duty fleet. Based on EPA and NHTSA's current market forecast, even as soon as MY 2011, passenger cars will comprise a larger share (59.2 percent) of the light vehicle market; passenger cars and light trucks will, on average, be smaller by 0.5 sf and 1.3 sf, respectively; and average required CAFE levels will be higher by 0.2 mpg, 0.3 mpg, and 0.3 mpg, respectively, for passenger cars, light trucks, and the overall light-duty fleet.

Two, EPA does not believe that the risk of changing vehicle offerings to "game" the passenger car and light truck definitions is as great as some commenters imply for the model years in question. NHTSA's recent clarification of the light truck definitions, which EPA is adopting in its vehicle classifications for the GHG program, has reduced the potential for gaming, and resulted in the reclassification of over a million vehicles from the light truck to the passenger car fleet. The changes that commenters suggest manufacturers might make may not be so simple nor so likely to be accepted by consumers. For example, 4WD versions of vehicles tend to be more expensive and, other things being equal, have inherently lower fuel economy than their 2WD equivalent models. Therefore, although there is a market for 4WD vehicles, and some consumers might shift from 2WD vehicles to 4WD vehicles if 4WD becomes available at little or no extra cost, many consumers still may not desire to purchase 4WD vehicles because of concerns about cost premium and additional maintenance requirements; conversely, many manufacturers often require the 2WD option to satisfy demand for base vehicle models. Additionally, increasing the footprint of vehicles involves platform changes, which usually requires a product redesign phase. Alternatively, turning many 2WD SUVs into 2WD light trucks would require manufacturers to squeeze a third row of seats in or significantly increase their GVWR, which also requires a significant change in the vehicle's overall design.

Three, EPA believes that the shapes of the car and truck footprint curves, including the "flattening" at the largest footprint values, tend to avoid or minimize regulatory incentives for manufacturers to upsize their fleet to change their compliance burden. Given the way the curves are fit to the data points (which represent vehicle models' GHG

emissions and fuel economy mapped against their footprint), the agencies believe that there is little real benefit to be gained by a manufacturer upsizing its vehicles. The agencies' analysis indicates that, for passenger car models with footprints falling between the two flattened portions of the car footprint curve, the actual slope of fuel economy with respect to footprint, if fit to that data by itself, is about 27 percent steeper than the curve being promulgated today. This difference suggests that manufacturers would, if anything, ease their compliance burden by reducing vehicle footprint than by increasing vehicle footprint. For light trucks, the agencies' analysis indicates that, for models with footprints falling between the two flattened portions of the corresponding curve, the slope of fuel economy with respect to footprint is nearly identical to the curve being promulgated today. This suggests that, within this range, manufacturers would typically have little incentive to either incrementally increase or reduce vehicle footprint. A number of commenters, including Honda, affirmed that this is the case.

At the same time, adding another backstop standard would have virtually no effect if the standard was weak, but a more stringent backstop could compromise the objectives served by attribute-based standards – that they distribute compliance burdens more equally among manufacturers, and at the same time encourage manufacturers to apply fuel-saving technologies rather than simply downsizing their vehicles, as they did in past decades under flat standards. This is why Congress mandated attribute-based CAFE standards in EISA. This compromise in objectives could occur for any manufacturer whose fleet average was above the backstop, irrespective of why they were above the backstop and irrespective of whether the industry as a whole was achieving the emissions and fuel economy benefits projected for the final standards, the problem the backstop is supposed to address. For example, the projected industry wide level of 250 gm/mile for MY 2016 is based on a mix of manufacturer levels, ranging from approximately 205 to 315 gram/mile[3] but resulting in an industry wide basis in a fleet average of 250 gm/mile. Unless the backstop was at a very weak level, above the high end of this range, then some percentage of manufacturers would be above the backstop even if the performance of the entire industry remains fully consistent with the emissions and fuel economy levels projected for the final standards. For these manufacturers and any other manufacturers who were above the backstop, the objectives of an attribute based standard would be compromised and unnecessary costs would be imposed. This could directionally impose increased costs for some manufacturers. It would be difficult if not impossible to establish the level of a backstop standard such that costs are likely to be imposed on manufacturers only when there is a failure to achieve the projected reductions across the industry as a whole. See comments from Ford Motor Company above supporting this reasoning. An example of this kind of industry wide situation could be when there is a significant shift to larger vehicles across the industry as a whole, or if there is a general market shift from cars to trucks. The problem the agencies are concerned about in those circumstances is not with respect to any single manufacturer, but rather is based on concerns over shifts across the fleet as a whole, as compared to shifts in one manufacturer's fleet that may be more than offset by shifts the other way in another manufacturer's fleet. However, in this respect, a traditional backstop acts as a manufacturer specific standard.

[3] Based on estimated standards presented in Preamble tables III.B.1-1 and III.B.1-2.

While the simplest form of GHG emissions backstop is a universal standard, i.e., a single gram/mile level that no manufacturer could exceed, a few commenters suggested alternative GHG emissions backstop approaches. The most common alternative approach suggested by commenters was an industry-wide "trigger" or "ratchet" approach, whereby EPA would build into the standards an automatic lowering or flattening of the GHG-footprint curves if the industry-wide model mix and footprint characteristics changed sufficiently to reduce the actual GHG emissions savings relative to the projected GHG emissions savings. The concept of a ratchet mechanism recognizes the problem discussed above,, and would impose the new more stringent standard only when the problem arises across the industry as a whole. While the new more stringent standards would enter into force automatically, any such standards would still need to provide adequate lead time for the manufacturers. Given the short lead-time already before the 2012 model year, a ratchet mechanism in this rulemaking that would automatically tighten the standards at some point after model year 2012 is finished and apply the new more stringent standards for model years 2016 or earlier, would fail to provide adequate lead time for any new, more stringent standards. Since the GHG emissions standards remain in effect unless and until they are changed, there would be greater lead time for future years beyond model year 2016. However, as discussed below, EPA believes the better course is to monitor model mix and footprint characteristics, and associated GHG emissions reductions, and reconsider this issue in the future if a problem arises.

EPA believes that it has ample reasons to choose not to exercise its discretion under section 202 (a) (1) to adopt a backstop. EPA consequently disagrees with the Center for Biological Diversity that any choice not to adopt a backstop would be impermissibly arbitrary.

While EPA is not adopting GHG emissions backstops, EPA plans to conduct and document retrospective analyses to evaluate the model mix and footprint characteristics of the future fleet during the rulemaking timeframe and to compare these characteristics to what EPA has projected in this rulemaking analysis. If EPA determines that there is a significant shift in the industry's product mix resulting in a relaxation of their estimated targets and overall GHG emissions savings, EPA will reconsider the relative merits of GHG emissions backstops in future rulemakings under the CAA.

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4. EPA Response to Comments on Joint Issues and Technical Work

4.1. Baseline Market Forecast

Organization: International Council on Clean Transportation

Comment:

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 58]

The technical analyses conducted by EPA and NHTSA are sound and demonstrate that proposed standards are feasible and the benefits of the rule far outweigh the costs. The analytical perimeter also provides a good base for further reductions in fuel consumption and greenhouse gas emissions beyond 2016.

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

Organization: Dr. Walter McManus, Ph.D., Research Scientist, University of Michigan Transportation Research Institute (UMTRI)

Comment:

NHTSA has historically based its analysis of potential new CAFE standards heavily on private information—extensive and detailed product plans for vehicles, engines, and transmissions. This private information is obtained voluntarily, and NHTSA is obligated to prevent its public disclosure. [OAR-2009-0472-3651.1, p.3]
The new approach is more transparent. The information sources (with few exceptions), are all either in the public domain, available to the public upon request, or available commercially. This is arguably the most profound change in the methodology. In the past, the process was essentially immune from rigorous review. In the new process, anyone can repeat and review the analyses done by the agencies. [OAR-2009-0472-3651.1, p.3]
Transparency produces some tangible benefits to consumers and automakers. The new approach reduces the potential for errors (whether of omission and/or commission) that have been observed in past responses to NHTSA's requests. The new approach more accurately measures the incremental costs and benefits of the proposed standards. The product plans submitted recently show a significant increase over prior plans in applications of technology to improve fuel economy. To the extent that improvements have been planned in anticipation of future increases in CAFE standards, they should not be in the baseline. They would be in the old process. [OAR-2009-0472-3651.1, p.3]

[[Dr. McManus, also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 36-37.]

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

Organization: Public Citizens and Safe Climate Campaign

Comment:
We appreciate and support the agencies' use of publicly available information about technology adoption. NHTSA's previous approach, using confidential product plans made it impossible for the public to verify NHTSA's technology forecast. It also introduced the potential for automakers to game the standard-setting process by providing incomplete or misleading product plans. Using publicly available data makes the standards more transparent and provides the opportunity for broader participation in estimating the technological feasibility of improving vehicle efficiency. [OAR-2009-0472-7050.1, p.10]

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

Organization: New York State Department of Transportation

Comment:

The baseline condition used in the analysis of alternatives for the previous CAFE proposals was based on manufacturers' confidential plans for each model year, whereas the baseline in this proposal is based on each manufacturer's actual MY 2008 fleet. We agree that this approach will result in more complete market data and is more transparent than relying on manufacturers' confidential plans. [OAR-2009-0472-7531.1, p.2]

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

Organization: Kleinbaum, Rob

Comment:

As Ronald Reagan used to say, we need to trust but verify. And that, it seems, is exactly what the new rule does. Central to the success of both the rule and the automakers, is transparency. [OAR-2009-0472-4074, p.2]

Much of the debate on the impact of fuel economy has been clouded by the fact that data and assumptions are not disclosed. NHTSA has historically based its analysis of potential new CAFE standards heavily on private information-extensive and detailed product plans for vehicles, engines, and transmissions. This private information is obtained voluntarily, and NHTSA is obligated to prevent its public disclosure. [OAR-2009-0472-4074, p.2]

The new rule's proposed approach is more transparent, with most sources in the public domain or readily available. This is a critically important change in the methodology since, in the new process, anyone can repeat and review the analyses done by the agencies. [OAR-2009-0472-4074, p.2]

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

Organization: American Council for an Energy Efficient Economy

Comment:

ACEEE applauds USEPA and NHTSA for taking the enormous step towards energy security and environmental protection that this joint rulemaking represents. The proposed rule offers very substantial increases in fuel economy and reductions in vehicles' greenhouse gas emissions.
The rule also reflects important analytical improvements over the approach taken in previous rulemakings, especially the more thorough and transparent analysis of the technical potential to reduce emissions and fuel consumption, and the associated costs. In addition, the agencies' use of a publicly available data set fully describing the reference fleet, rather than confidential manufacturer product plans, to develop the rule allows the public to understand in detail the basis for the standards. [OAR-2009-0472-7260.1, p.1]
[ACEEE also submitted these comments as testimony at the New York public hearing, See docket number OAR-2009-0472-4621, pp. 138.]

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

4.1.1. 2008 Baseline Fleet

Organization: Ford Motor Company

Comment:

Pursuant to the National Highway Traffic Safety Administration's (NHTSA's) September 22nd, 2009 Request for Product Plan Information (74 FR 48192) to acquire new and updated information regarding vehicle manufacturers' future product plans to aid in establishing model year 2012-2016 passenger car and light truck average fuel economy standards, Ford Motor Company (Ford) conducted an assessment of its future product plans and concluded that they are materially unchanged from our May 1, 2009 submission. Ford requests that NHTSA and EPA continue to reference the Ford submission to the NHTSA Office of the Chief Counsel Docket Number NHTSA-2009-0042, Docket ID: NHTSA-2009-0042-0006.1. Ford requested and was granted confidential treatment for designated information in that submittal. Confidential treatment of such information continues to be appropriate until the end of the specified or applicable model year identified in the submittal, for the reasons outlined in the May I cover letter. Should the agency have any questions regarding Ford's product plan information, please contact Cynthia Williams. In the event of any questions about the confidential nature of the May 1 submittal, please contact Mark Edie, Office of the General Counsel, Ford Motor Company, Suite 450, 1350 I St. NW, Washington D.C. 20005. [NHTSA-2009-0059-0063.1, p. 1]

EPA Response:

The EPA appreciates the update on the status of Ford's product plan. The agency has treated all manufacturers' product plans as confidential business information and has not released or otherwise divulged any confidential information in the baseline fleet utilized for analytical purposes in each agency's rules. Also, it is important to note that the baseline fleet was not updated to reflect information that would have been available at the end of the 2009 model year. The baseline fleet continued to be constructed from publicly available data, and based on 2008 model year vehicles for the final rulemaking. The agencies' reasons for doing so are set out in section II.B.4 of the preamble to the final rule.

Organization: General Motors

Comment:

On May 1, 2009, GM responded to a NHTSA request for a detailed product plan (EPA was subsequently copied). As part of that submission, GM provided very detailed product information, aligned with the restructuring plan submitted to the Treasury Department in February 2009. Since that time, GM has gone through bankruptcy reorganization and has updated its restructuring plan accordingly. Rather than recompiling the entire detailed product plan spreadsheets for September 2009, below we have outlined the major changes that have occurred since our prior submission and provide data as appropriate. The changes can be summarized as follows:

Discontinuation of GM Brands

The most notable change to the GM product plan is the discontinuation of 4 of our brands and the associated models. The previous submission had included a longer wind-down of Saturn, Saab and HUMMER, and did not anticipate the closing of Pontiac. Pontiac, Saturn, Saab and HUMMER will no longer be part of GM in the future. Pontiac production has already been discontinued, and we are still awaiting resolution on the sale/disposition of Saab and HUMMER. GM is not planning on any significant 2010 MY volume for Saturn, Saab and HUMMER and most of Pontiac (Pontiac Vibe and G6 have 2010 MY volume). [OAR-2009-0472-6953.1, p.32]

EPA Response:

The EPA appreciates the update on the status of GM's product plan. It is important to note that the baseline fleet was not updated to reflect the new information from GM. One reason for doing so, as noted in the preamble to the final rule, is that "although the agencies recognize that these specific vehicles will be discontinued, we continue to include them in the market forecast because they are useful as a surrogate for successor vehicles that may appear in the rulemaking time frame to replace the discontinued vehicles in that market segment."

Market share in our reference fleet are based on CSM's 4th quarter forecast that takes into account changes to GM's brand lineup. The projections distribute GM's market share across all of GM's 2008 model year brands. For a complete explanation of methodology used to create the projections and fleet file for modeling, see the first chapter of the joint technical support document.

4.1.2. 2012 - 2016 Reference Fleet

Organization: California Air Resources Board

Comment:

The agencies have requested comment on their use of publicly available data to determine the baseline fleet for model years 2012-2016. CARB agrees with the agencies that this approach provides greater transparency to the process and avoids some of the inherent problems noted in the NPRM from relying on incomplete and limited data from manufacturers' future production plans. The NPRM acknowledges that because future fleet projections are based on the model year 2008 fleet some vehicles models manufacturers have already announced for production in the near future are not included in the analysis. We agree with the agencies that the likely impact of this omission is minor. [OAR-2009-0472-7189.1, p.10]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

EPA Response:

The EPA appreciates the positive feedback on the methodology used in the proposal. We continue to believe to that our methodology is a transparent way to accurately assess the costs and benefits of the rule.

Organization: General Motors

Comment:

GM recommends that the agencies reduce the projections for large pickup volume in the future fleet in every model year, thus lowering the requirements for large pickups yet still maintaining the overall industry goal of 250 CO_2 g/mile (35.5 mpg equivalent) by 2016 model year. From a baseline vehicle fleet, the agencies developed a methodology to project the size, composition, volume and footprint of the segments of the future fleet. The methodology projects an uncharacteristically large volume of large pickup trucks in the future and therefore compels the results to require more reductions from this segment of the fleet. The agencies used a forecast from CSM and added some of their own modifications. In searching for explanations for these discrepancies, we note that the agencies' forecast could possibly have erroneously included some volume of unregulated pickups. Regardless, the agencies' projections of large pickups lead to higher overall requirements for those vehicles. [OAR-2009-0472-6953.1, p.25]

EPA Response:

GM correctly posits that the 2011 and 2016 reference fleets used by the agencies in the proposed rule over-project the number of large pickup trucks. EPA in fact came to this same conclusion after issuing the NPRM, but before the comment period started. The over-estimate at proposal occurred because the standard CSM forecast included heavy duty class 2b and class 3 vehicles (which are not light duty vehicles, and so are not subject to the rule). This had the effect of increasing the volumes of large pickup trucks and full size vans disproportionately to the other truck classes. To correct the overestimate, EPA used a custom forecast from CSM in projecting the reference fleets used for analytical purposes for the final rule. This custom forecast had all class 2b and 3 vehicles that did not qualify as medium duty passenger vehicles removed from the forecast.

4.2 Reserved

4.3 Reserved

4.4. Joint Vehicle Technology Assumptions

Organization: California Air Resources Board

EPA Response to Comments

Comment:

The agencies requested comment on the joint technology analysis and assumptions, including new types of analyses introduced in this joint proposal. CARB believes the joint technological and cost analyses are fundamentally sound. CARB supports the agencies methodology for determining component technology costs. Clearly, component teardown costs as determined by FEV are the most reliable method for assessing technology costs. Absent such detailed cost data, the next best option is a bill of materials approach – used by CARB in determining costs for California's GHG standards – supplemented by cost data from manufacturers, component suppliers, and public sources. As additional teardown cost data becomes available, the agencies should include those costs in the final rule. Given the uncertainties in the model inputs raised in our previous comment on EPA's estimate of future fleet mix, EPA's use of the OMEGA model appears to be a reasonable methodology to determine manufacturers' technology implementation and costs for compliance with the proposed GHG requirements. Although CARB used a different methodology to determine the cost-effectiveness of its GHG requirements, it is not surprising that EPA has arrived at the same conclusion regarding what levels of GHG emission reductions are reasonable and achievable in the same timeframe.

EPA requested comment on their estimates for diesel cost, mass reduction and material substitution generally (techniques, costs, and effectiveness), and revised hybrid system costs. EPA's technology costs and effectiveness estimates generally match those determined by CARB for the same technologies. This is not surprising because most of the technologies are well known and are either already being implemented in vehicles or are at the prototype stage. Concerning hybrid systems, CARB does not believe they are required to meet the proposed standards. Nonetheless, the costs cited in the DRIA may be reasonable when considered in the timeframe of the proposed GHG program. However, we would note that the costs cited for power split systems seem high in light of Ford and Toyota's statements that they have made significant cost improvements in their hybrid systems and are currently making some profit from their hybrid vehicles. In addition, as hybrid drive systems and batteries undergo further refinement, their costs are expected to decrease near and beyond 2016.

EPA also requested specific comment on their mark-up factor of between 1.11 and 1.64, depending on the technology. As noted in our response above, CARB supports the methodology used by the agencies to determine component costs. CARB is also supportive of the comprehensive analysis EPA undertook to determine indirect component costs to the manufacturer resulting from production and retail related costs. EPA noted in its DRIA that cost multipliers will vary between components depending on the complexity of the technology and the timeframe. CARB agrees with EPA's analysis that less complex and/or more mature technologies would incur lower production and retail costs. [OAR-2009-0472-7189.1, p.10]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

EPA Response:

EPA appreciates CARB's comments and agrees with them. As regards the comment on power-split hybrid cost estimates being too high, both agencies continue to believe that the cost estimates used in the proposal and final rules are the best estimates available at this time. Although the agencies agree that some manufacturers have made statements recently about improvements to their systems having resulted in cost reductions, we prefer instead to base estimates on engineering analysis. Note also that recent manufacturer statements pertain to existing hybrid systems based on nickel-metal hydride battery technology while the cost estimates in our rules are based on Li-Ion battery technology. This adds another level of uncertainty to the press release type statements made recently by auto makers.

Organization: BorgWarner

Comment:

(1) The need for technology-neutral legislation. As a supplier of multiple advanced technologies named in the joint proposal for improving fuel economy and emissions, BorgWarner supports technology neutrality. We believe there is no single 'silver bullet' technology that meets the American consumers varied driving behaviors. It will take a combination of several advanced technologies to meet the needs of automakers and consumers seeking more fuel efficient vehicles. However, the joint proposal falls short of achieving technology neutrality in several areas: the delay in the adoption of real-world driving data in vehicle ratings, offering large credits for a select few technologies, and using models that discourage the use of other effective technologies. [OAR-2009-0472-7289], p.1

Our primary concern is the delay in adopting fuel economy and CO2 rating calculations that are closer to the real world driving behaviors. According to a 2006 EPA study, American consumers accumulate 57% of their miles on the highway and 43% in the city. However, the proposed rule continues to base fuel economy and CO2 ratings on outdated 1975 data that showed the American consumer accumulated 45% of their miles on the highway and 55% in the city. As a result, existing and proposed vehicle fuel economy and CO2 ratings are inaccurate measures of today's real-world fuel economy and CO2 production. Continuing to rate vehicles with this inaccurate data essentially discourages any technologies that excel in highway driving conditions (speeds over 45 mph) and may encourage an unintended bias toward vehicles that perform better in city driving conditions. If not addressed now, the auto industry will continue to invest and make decisions based on outdated information for another seven years. Decisions based on outdated calculations may not lead Americans or the auto industry to the right choices to reduce oil dependence and real-world CO2 emissions. [OAR-2009-0472-7289, pp.1-2]

Significant long-term technology and capital decisions are being made now, and regulations need to properly tie these decisions to real-world benefits as best as possible. This is one of the key principles outlined in the 'Bellagio Memorandum on Motor Vehicle

Policy,' which suggests policies should be based on real-world performance compared to societal objectives, and not given special consideration for specific fuels, technologies, or vehicle type. Since the EPA already uses the revised driving cycles of 57% highway and 43% city in other areas such as the 'Fuel Economy Trends Report,' if should be relatively simple to change the formulas for the upfront calculations to provide a consistent measure. No testing protocol is changed, only the weighting calculations. Implementing this calculation change now brings us a step closer to utilizing real world measures to provide real world results. This also supports President Obama's desire for the joint proposal to provide clarity, stability and predictability and the EPA's own desire to tie technologies to real-world results. [OAR-2009-0472-7289, p.2]

EPA Response:

EPA interprets the reference to "1975 data" to mean the Federal Test procedure used to implement the standard (which reflects the relative proportions of highway/city driving referenced in the comment). EPA believes it is premature to use different test procedures to evaluate performance at this time as virtually all current data on technology performance is based on 2-cycle testing. Moreover, as a matter of law, CAFE standards for passenger cars (although not light trucks) must be established using the FTP. 42 USC section 32904 (c). At the same time, the agencies have accounted for the difference in real world performance in assessing the results of their respective rules, adjusting fuel economy results by 20% to account for the difference.

4.4.1. Technologies Considered

Organization: International Council on Clean Transportation

Comment:

EPA and NHTSA conclude that 'the application of diesel engines on small vehicles is not a viable or cost effective option'. Thus, the cost and effectiveness estimates did not include the technology of a diesel engine with lean NOx trap (LNT) catalyst after-treatment on a small car.

While the market share of diesel passenger cars in general is currently at a very low level in the US (<1%), the technology should not be completely ignored for the following reasons: (1) Volkswagen and Mercedes have a history of selling diesel cars in the US, with regular customers eager to buy diesel cars in the future. (2) Average market share of diesel passenger cars in Europe is about 50%. European manufacturers are interested in exporting some of their diesel models to the US to establish an additional business segment. (3) Diesel engines are able to meet Tier 2 standards in small cars without needing a deNOx catalyst or urea injection (Selective Catalytic Reduction – SCR), making compliance easier and cheaper than for larger diesel vehicles.

Volkswagen's success in selling smaller diesel cars in the US supports this assumption. Volkswagen of America recently announced that 5,072 diesel vehicles were sold in June 2009, representing 26% of total sales for the month. Diesel engines accounted for 81% of Jetta SportWagen sales, and 40% of Jetta sedan sales. For 2010 VW is introducing a diesel version of the Golf and expects that 30% of all Golf hatchbacks sold in 2010 will be equipped with a turbocharged diesel engine.

Given this background, ICCT suggests considering diesel technology for small passenger cars and assessing their cost and effectiveness.

[OAR-2009-0472-7156.1, pp.22-23]

EPA Response:

The final standards, of course, do not mandate any particular technology path. Manufacturers remain free to use any package of technologies (and other compliance strategies, such as use of credits) to achieve their fleetwide average. The OMEGA modeling is used by EPA to forecast potential compliance paths, not to determine the level of the standard. That being said, EPA at proposal evaluated diesel technology in its consideration of potential technology packages for all vehicles other than small cars, and in the final rule, included diesel technology in the technology packages for small cars as well. EPA is not predicting that manufacturers will utilize diesel technology to comply with the model year 2012-2016 standards because it is considerably more expensive and less cost effective than other potential technologies. Specifically, the diesel package was not as cost effective as other packages in the compact car vehicle type (vehicle type 2) and was not, therefore, chosen by the OMEGA model. This does not mean that diesel technology is not a viable technology for small cars, but rather that using the metrics used by the OMEGA model and the model inputs used by EPA, it was not considered to be as cost effective as other technologies. If the consumer demands diesel technology in this market segment, a manufacturer will probably offer it, and nothing in the rule prevents manufacturers from doing so.

Organization: University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy, University of Miami, School of Law

Comment:

Stringency of Targets

The stringency of the footprint-fuel economy curve at the year 2016 represents fuel efficiencies attainable utilizing maximum technology available at present. NHTSA and EPA's interpretation of 'maximum technology' is crucial to the annual increase in stringency of this curve; this underscores the importance of assumptions pertaining to technological advancement. According to the NHTSA/EPA joint technical support document, many of the technologies included in the proposed ruling are currently 'well known' and 'readily available'. Technologies presently in the research and development

phase were not considered because of uncertainty surrounding implementation. [OAR-2009-0472-7188.1, p. 3]

We feel that it is inappropriate to base regulations for the year 2016 solely on technologies that are available today. Technologies currently in the research and development phase should be considered in setting the standards for the latter years of this proposed ruling. [OAR-2009-0472-7188.1, p. 4]

We maintain that the fuel economy curves need to be more stringent as an incentive for manufacturers to innovate and devote more capital to the research and development of fuel saving technologies. Similar technology-forcing occurred in the 1970s during the phase-in of catalytic converters in all automobiles. At that time, automakers unanimously maintained that the high cost of phase-in exceeded the overall benefit and high uncertainty in performance effects. In 1975, emissions standards necessitated automakers to adopt these technologies though they previously deemed them undesirable. We recommend that the fuel economy curves be stringent enough to encourage manufacturers to reach for forthcoming technologies. [OAR-2009-0472-7188.1, p. 4]

Although many of these technologies are available today, the emissions reductions and fuel economy improvements proposed would involve more widespread use of these technologies across the light-duty vehicle fleet, which account for about 40% of all U.S. oil consumption, and about 60% of transportation sector oil use. Ultimately, the greenhouse gas emission reductions this program would bring about are equivalent to the emissions of 42 million cars. [OAR-2009-0472-6770, p. 1]

When considering technological feasibility, the agencies should give consideration to more than just currently applied technology, including experimental and developing technology. Of course, the economic costs to manufacturers and consumers of this potentially expensive technology must be given due weight. Technology that would create prohibitive costs for manufacturers and/or consumers should not be required. However, this should not imply that such technology be permanently overlooked [OAR-2009-0472-6770, p. 1]

EPA Response:

Availability of adequate lead time is an essential component of both agencies' statutory mandates. EPA indeed has sound reasons for rejecting a standard based on increasing stringencies of 6%, and the type of approach advocated by the commenter forcing aggressive use of still-to-be-developed technologies would be more stringent still and hence inappropriate. See preamble section III.D.7 and comment response 3.3.3.3.1. Even for technologies that are well known and readily available, there are two underlying issues that affect the time frame during which these technologies can be adopted by manufacturers. EPA determined that there is adequate lead time to employ the financial, engineering, and other resources needed to achieve the standards, recognizing that a significant portion of these human and capital resources would need to be expended during the next few years. Lead time is already somewhat constrained for these model

years, as it is now 2010 and MY 2012 is only a number of months away. The farthest model year, 2016, also is not many years from now, given the time needed for redesigning cars and trucks for new production. More specifically, the first set of factors related to adequacy of lead time is manufacturers' production capacity and the ability of automobile manufacturers and suppliers to produce these technologies in sufficient volumes to support all applications. For example, even though the capacity of dual clutch transmissions continues to increase, there will not be sufficient volume to supply every vehicle sold in the United States in the 2016 MY. The second issue concerns coordination of technology additions with manufacturers' design cycles. It takes several years to redesign a vehicle, and several more to design an entirely new vehicle not based on an existing platform. Thus, redesign cycles, i.e. consideration of the time needed to design, are an inextricable component of adequate lead time under the Act. As noted in section III.D.6 of the preamble to the final rule, Vehicle manufacturers typically redesign their vehicles every five years and it takes several years to redesign a vehicle. Furthermore, redesigns require a significant outlay of capital from the manufacturer. This includes research and development, material and equipment purchasing, overhead, benefits, etc. These costs are significant and are included in the cost estimates for the technologies in this rule. Because of the manpower and financial capital constraints, it would only be possible to redesign all the vehicles across a manufacturer's line simultaneously if the manufacturer has access to tremendous amounts of ready capital and an unrealistically large engineering staff. However no major automotive firm in the world has the capability to undertake such an effort, and it is unlikely that the supplier basis could support such an effort if it was required by all major automotive firms.

Consequently, EPA believes that the level of stringency chosen for the final rule is sound and reasonable, and based on proper consideration not only of available technologies but the costs and necessary lead time for its introduction throughout the vehicle fleet.

Organization: BorgWarner

Comment:

Finally, through the issues mentioned above and in some of the Volpe modeling, we find the proposal offers limited credits and incentives for advanced clean diesel technologies. The Volpe model only considers diesel technologies for vehicles with engines of 6 cylinders or more. The model does not apply diesel technologies to 4-cylinder engines, even though these vehicles are very efficient for highway driving. In fact, clean diesels vehicles that are emissions certified in 50 states are selling well in the US, where they are available, as a result of their fuel efficiency. Over the next five years 4-cylinder diesel engines will have the highest compounded annual growth rate within diesel engines in the United States. Looking at global trends, in five years 4-cylinder diesels will account for 87% of the diesel market, and solid diesel growth is expected in even smaller engines such as 2 and 3-cylinder engine. In 2009, the percentage of consumers selecting dean diesel vehicles actually surpassed the percentage of consumers selecting hybrid electric powertrain vehicles. As we transition to more fuel efficient vehicles, there is a role for advanced light-duty diesels. Therefore, all technologies need to be on equal ground and

evaluated/incentivized based on their real-world performance. [OAR-2009-0472-7289, pp.2-3]

EPA Response:

Regarding Borg Warner's comment on clean diesels and, in particular, 4-cylinder clean diesels, the agencies appreciate the views laid out by Borg Warner but emphasize that the modeling done to support the proposed and final rules does not limit what can and cannot be done by manufacturers to comply with the standards. Instead, the modeling done is meant to evaluate the feasibility of, and the most cost effective means of complying with, the new standards. In other words, the modeling done does not in any way prohibit the technologies manufacturers may choose to use or that consumers may choose to buy. Should manufacturers and/or consumers prefer diesel technology to other technologies (downsized/turbocharged gasoline engines, hybrids, etc.), these technologies can be utilized so long as a manufacturer meets its fleetwide standard.

Organization: American Iron and Steel Institute

Comment:

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 70-77.]

Steel is the basis for modern vehicles in the U.S. and around the world. Recent studies over the last three years have found that the average light vehicle in North America contains about 60 percent steel. Our goal, of course, in the steel industry is to keep steel in the vehicle, to preserve and grow this vital market. Let me explain why this steel industry objective supports the goals of EPA and NHTSA; that is, why steel technology helps to reduce emissions associated with vehicles.

I would like to make three points today. One on reinventing steel, one on the importance of collaboration, and the third on steel's greenness as measured by lifecycle analysis.

Now, first, the steel industry has reinvented its automotive steel products in the past and must continue to do so in the future if it is to continue to provide safe, practical and affordable means of reducing vehicle mass, which leads to emissions reductions. For example, in my experience working in programs with GM, Ford, and Chrysler as well as the new North American domestics including Toyota, Honda, Nissan, Hyundai, BMW, Mercedes and others, I can tell you that all of these companies, which do manufacture vehicles in North America, make use of state-of-the-art high-strength steel grades manufactured by domestic steel mills. Now, this proposed rule on light-duty vehicle emissions clearly reports the consensus by EPA and NHTSA that reducing vehicle weight is an effective part of the overall strategy for meeting the proposed emissions and fuel economy standards. EPA further has asked for comment on its conclusion that it is 'technically feasible to reduce vehicle weight without reducing vehicle size or footprint or structural strength.' I would like to say that AISI does agree with this statement since that

is exactly what is accomplished by the effective use of advanced high-strength steels or 'AHSS.' And I will explain this a little further.

These new steels have helped car makers to achieve 5-star crash ratings in their latest models without increasing vehicle mass. This is consistent with EPA comments written in the Weight Reduction and Vehicle Safety Draft on the Regulatory Impact Analysis, talking mainly by reducing vehicle mass and including comments like the substitution of lower density and/or higher strength materials -- going on to explain that including high-strength steels, aluminum, magnesium, or composite materials for components currently fabricated from mild steels. In fact, it is these AHSS grades in today's cars and trucks, and their growth over the last 10 years, that have made steel bodies and chassis components considerably stronger and lighter, and more crashworthy than ever before. Such grades include 'dual phase' and 'TRIP' steels, grades that are new to these -- these new grades now add up to about 15 percent of the average vehicle, new vehicle now made in the U.S., and are the fastest growing materials, by the way, in today's vehicles. These materials have already proven to reduce the mass of body structures by up to 25 percent or even more in some cases, and can do this more affordably than any other materials considered for mass reduction. AISI believes there is more weight savings to be gained by further using these materials in future vehicles.

My second point has to do with collaboration. AISI believes collaboration is essential for both the steel and automotive industries to move forward and implement the technologies that drive down emissions. Our partnering together is well known for achieving productive results. In 1987, the Auto/Steel Partnership was formed with Chrysler, Ford, and General Motors, and the major domestic steel mills and still operates today. In the 1990s the domestic steel companies organized with a global consortium to form the ULSAB-ARV and Ultra-Light Steel Auto Body, consortium of those groups, that released a study that showed the power of advanced computer-aided design or CAE analysis coupled with advanced high strength steels could lead to weight reduction, mass reduction, and safe and fuel efficient vehicles. One case study done by the Auto/ Steel Partnership examined mass reduction and safety together and did this with folks on the vehicle front rails, an important load path in determining vehicle crash performance. Before ULSAB -- these rails were mainly made of mild steel. After that study on ultra light vehicles was released with the help of the Auto/Steel Partnership project re-engineering the front rails, almost all front rails today in vehicles have been converted to advanced high strength steel, AHSS. The project, in fact, demonstrated that front rails can be built 25 percent lighter with AHSS and absorb the same crash energy. This was engineered on the computer, of course, and validated, though, with actual frontal crash tests.

My third point is that steel is a green material, in fact, greener than most people think, particularly with respect to the emissions associated with every phase of a vehicle's life. For example, did you know that steel has a much lower energy content per ton and energy intensity and less CO2 emissions, therefore, than most other automotive structural materials? This is particularly important in containing emissions in the manufacture of vehicles.

For example: If you compared steel to aluminum, you'd find that aluminum has over 8 times the energy intensive, magnesium 7 to 14 times, and carbon fiber over 10 times the energy intensity of steel. Additionally, our domestic steel mills have the lowest energy intensity per ton produced of any steel sector in the world and the domestic industry has reduced its energy intensity by 33 percent by improvements in steel making from 1990 to 2007.

Finally, steel is really the most recycled material in the world and averages 97 percent recycling rate, and that's the tons of automotive steel recycled divided by the tons used to make new cars and trucks each year, and has done that for the last 20 years. This is really why steel has such extremely low emissions when the full life cycle of the automotive products are considered.

Therefore, let's consider really how steel contributes to emissions in three ways. In fact, through the manufacturing phase because of its low energy emissions, in use phase because of its ability to reduce mass, and at the end-of-life because of its high recycling rate.

So in conclusion, the steel industry has a rich and productive history of working with its automotive customers over the years towards objectives like mass reduction and safety -- objectives which I believe are fully consistent with those of EPA and NHTSA. Even in these very difficult times, I can report to you that our collaborative work is going strong, mainly because we are working on important issues for future vehicles which will lead to vehicle emissions reductions. AISI recommends that there be serious consideration given to the LCA or life cycle performance of materials in the manufacturing of light vehicles in the future, mainly I mean beyond 2016. We should evaluate possible credits or allowances for those materials which provide bona fide reduction s in emissions over a vehicle's full life. In this way all factors will be considered towards the goal of continuous reduction of vehicle emissions.

EPA Response:

EPA agrees with AISI that there are ways of reducing vehicle mass without negatively affecting the vehicle's functional objectives, including safety. As AISI also noted, there are many vehicles currently being manufactured and operated within the United States that make use of high strength steel, and that high strength steel now makes up about 15 percent of the average vehicle. This further supports the EPA position that it is critical that assessments of the relationship between vehicle mass and safety be performed, to the extent possible, on data which reflects the safety performance of current production vehicles. EPA also agrees that the issue of lifecycle emissions accounting may be appropriate to consider for subsequent rulemakings. See also preamble discussion in sections III.C.2.b.ii and III.C. explaining those limited instances where EPA is considering issues of vehicles' lifecycle emissions in this rulemaking.

Organization: Motor and Equipment Manufacturers Association

Comment:

Standards Must Be Technology-Neutral
MEMA supported attribute-based standards, as prescribed in the Energy Independence and Security Act of 2007 (EISA), allowing changes to a vehicle's fuel economy that do not come at the expense of safety. Incentive language in EISA noted the important role suppliers play in research and development of the advanced technologies necessary to meet the fuel economic goals. No specific vehicle technology will meet all of America's driving needs. All options must be available in order to achieve our legislative and societal objectives of improving fuel economy, reducing emissions, and advancing energy independence. [OAR-2009-0472-7121.1, p.3]

The supplier industry innovates, creates, and integrates many types of components and technologies for vehicles and helps vehicle manufacturers accelerate the sort of modifications required to get more fuel efficient, lower emitting vehicles into the hands of consumers. The variety of means to achieve marked improvements in fuel economy and reduced emissions is why MEMA believes it is so important for any requirements not only to be attribute-based, but also technology-neutral. Otherwise, the risk of establishing requirements that may tend to favor one or two types of vehicle technologies over a myriad of other competing technologies (with equal or better performance) is too great and is counter to the intent of EISA. In addition, favoring certain technologies may foreclose even greater opportunities for fuel savings and emissions reductions that are available from developments in other 'non-favored' technologies or in combining technologies. Since a true attribute-based system is not a 'one-size-fits-all' approach, it encourages more innovation in various vehicle types to improve fuel economy and emissions in all vehicle classes. Unfairly favoring one or two types of technology over others also inhibits industry innovation and limits consumer choice. [OAR-2009-0472-7121.1, p.3]

Over time, complex combinations of vehicle technologies will increase and improve fuel efficiency and emissions. The NHTSA Volpe model adequately addresses the synergistic effects relating to the engine, transmission, electrification, hybrids, and other vehicle technologies. Positive synergies, for example, can be found with light weight materials (see Section III.A. [OAR-2009-0472-7121.1, pp.4-5]). However, the EPA proposal does not fully consider possible synergies that could be derived in air conditioning component technologies relative to the credits system (See Section IV [OAR-2009-0472-7121.1, pp.7-10]). All synergies must be fully examined and developed. [OAR-2009-0472-7121.1, p.3]

EPA Response:

MEMA's comments support several facets of the rule. First, the agencies believe that considering technologies across the entire vehicle is required in the regulation of fuel economy and CO2 emissions. Many factors outside of the powertrain affect fuel consumption and CO2 emissions, including aerodynamic drag, tire rolling resistance, and electrical accessory loads and only be addressing all of them from a system perspective

can the stringency required by this rule be obtained. Hence the use of a whole vehicle approach in the standard-setting process. See, e.g. the introduction to section III.D in the preamble to the final rule. With regard to the footprint based attribute curve not providing a technology preference, the agencies worked to provide an attribute curve that accomplished just that, and acknowledge MEMA's endorsement of such.

Organization: Recreational Vehicle Industry Association (RVIA)

Comment:

a. Application of Technologies to Tow Vehicles

In RVIA's July 1, 2008, comments to NHTSA regarding the 2011-2016 CAFE proposal (NHTSA - 2008-0089), we urged NHTSA to incorporate a 'heavy-tow capable' vehicle classification so as not to negatively impact safely towing or stopping recreation vehicle trailer combinations. While we regret that NHTSA did not incorporate this recommendation, we appreciate the fact that the Draft Joint Technical Support Document (TSD) prepared by EPA and DOT for this rulemaking addresses the issue of towing with regard to the following technologies: [NHTSA-2009-0059-0107, p.2]

In discussing hybrid technologies, the draft joint TSD included the following discussion (from pp.3-50):

Some manufacturers choose not to downsize the engine when applying hybrid technologies. In these cases, performance is vastly improved, while fuel efficiency improves significantly less than if the engine was downsized to maintain the same performance as the conventional version. While this approach has been used in cars such as the Honda Accord Hybrid (now discontinued), it is more likely to be used for vehicles like trucks where towing and/or hauling is an integral part of their performance requirements. In these cases, if the engine is downsized, the battery can be quickly drained during a long hill climb with a heavy load, leaving only a downsized engine to carry the entire load. Because towing capability is currently a heavily-marketed truck attribute, manufacturers are hesitant to offer a truck with downsized engine which can lead to a significantly diminished towing performance with a low battery, and therefore engines are traditionally not downsized for these vehicles. [NHTSA-2009-0059-0107, p.2]

In discussing electrically-driven accessories, the draft joint TSD included the following discussion (from pp.3-60):

Indirect benefit may be obtained by reducing the flow from the water pump electrically during the engine warm-up period, allowing the engine to heat more rapidly and thereby reducing the fuel enrichment needed during cold starting of the engine. Further benefit may be obtained when electrification is combined with an improved, higher efficiency engine alternator. Intelligent cooling can more easily be applied to vehicles that do not typically carry heavy payloads, so larger vehicles with towing capacity

present a challenge, as these vehicles have high cooling fan loads. [NHTSA-2009-0059-0107, pp.2-3]

In discussing integrated motor assist/crank integrated starter generator technology, the draft joint TSD included the following discussion (from pp.3-63):

EPA relied on a combination of certification data (comparing vehicles available with and without a hybrid system and backing out other components where appropriate) and manufacturer-supplied information to determine that the effectiveness of these systems in terms of CO2 reduction is 30% for small cars, 25% for large cars, and 20% for minivans and small trucks similar to the range estimated by NHTSA for the respective vehicle classes.. The effectiveness for small cars assumes engine downsizing to maintain approximately equivalent performance. The large car, minivan, and small truck effectiveness values assume less engine downsizing in order to improve vehicle performance and/or maintain towing and hauling performance. [NHTSA-2009-0059-0107, p.3]

In discussing 2 mode hybrid technology, the draft joint TSD included the following discussion (from pp.3-66):

For this proposal the CAFE model considered a range of 23 to 33 percent with a midpoint of 28 percent, assuming no engine downsizing to preserve the utility nature of medium and large trucks (e.g., maintaining full towing capability even in situations with low battery charge) and EPA estimates CO2 emissions reduction effectiveness to be 25 percent for large trucks (LDT3 and LDT4 categories) based on vehicle certification data. EPA estimates an effectiveness of 40 percent for smaller vehicles. [NHTSA-2009-0059-0107, p.3]

In discussing weight reduction, the draft joint TSD included the following discussion (from pp.3-74):

NHTSA and EPA estimate that a 10 percent reduction in mass results in a 6.5 percent reduction in fuel consumption while maintaining equivalent vehicle performance (i.e. 0-60 mph time, towing capacity, etc.) which is consistent with estimates in the 2002 NAS report. [NHTSA-2009-0059-0107, p.3]

In discussing the full series hydraulic hybrid technology, the draft joint TSD included the following discussion (from pp.3-81):

A Full Series Hydraulic Hybrid Vehicle (HHV) is somewhat similar in concept to a full series electric hybrid vehicle, except that the energy is stored in the form of compressed nitrogen gas and the power is transmitted in the form of hydraulic fluid. Series HHV technology currently under development by EPA is capable of a 40% decrease in tailpipe CO2 emissions in the small car, large car, minivan, and small truck classes. In the large truck class, a 30% CO2 reduction is possible. The large truck benefit is somewhat lower than the other classes because it is assumed that a large truck requires a larger

engine to maintain towing and hauling performance after the energy in the high pressure hydraulic accumulator is exhausted. This technology is still under development and not yet commercialized however there are technology demonstration vehicles in service with UPS in daily package delivery service. [NHTSA-2009-0059-0107, pp.3-4]

RVIA commends the agencies for taking towing into consideration in conducting its technology review. We encourage you to continue doing so and to incorporate provisions that allow for the continued availability of safe, effective tow vehicles as you proceed in finalizing the standards. [NHTSA-2009-0059-0107, p.4]

EPA Response:

First, many of the vehicles addressed by the commenter are not subject to this rule at all. This rule only applies to light duty vehicles of less than 8500 lbs. GVWR and medium-duty passenger vehicles less than 10,000 lbs. For those light trucks subject to the rule, EPA recognizes that light duty vehicles specifically designed for towing must not be compromised due to advanced GHG reducing technologies. EPA thus took care in its analyses to recognize the utility to consumers of towing capacity and in its engine packages used for modeling did not downsize engines (i.e. so that EPA did not seek to evaluate the standard's feasibility by downsizing engines). See RIA chapter 1 Tables 1-11 and 1-12.

4.4.2. Costs and Effectiveness of Technologies

Organization: Honeywell Transportation Systems

Comment:

Honeywell seeks clarification from EPA and NHTSA on the assumptions made in determining the cost and efficiency benefits of turbocharged engines. We offer the agencies additional information herein for consideration in refining its assumptions. It is now well accepted that turbocharging enables engine downsizing by allowing a smaller engine to satisfy the power requirements typically derived only from larger engines. The downsized engine can now meet consumer expectations while improving fuel economy of gasoline powered passenger vehicles. [OAR-2009-0472-7165.1, p.3]

EPA and NHTSA estimate the fuel efficiency advantage [or CO2] of a turbocharged and downsized engine to be in the range of 3 to 6 percent compared to a naturally aspirated engine of comparable performance and estimate the cost of implementing the technology to be in the range of $1,100. HTS would like to submit the following to show that the benefit to fuel economy is more in the range of 15 to 20 percent and implementing the technology is not as costly as described within the Proposed Rule. [OAR-2009-0472-7165.1, p.3]

Conventionally, large displacement, naturally aspirated gasoline engines are used to get high power and torque ratings. This results in the engine being operated in a throttled

condition most of the time, negatively impacting fuel economy. Downsizing the engine results in less throttling and higher operating efficiency, improving the overall fuel economy of the vehicle by 15 to 20 percent. For example, in its marketing materials, Ford claims that the 'primary benefits delivered by the Ford EcoBoost design approach include: optimized engine efficiency - fuel consumption and CO2 emissions reduced by up to 20 per cent; greater driving enjoyment - strong low-end torque and responsive performance across the full rev range; and the opportunity to downsize - large-engine performance, but with the size, weight and fuel economy of a much smaller unit. The technology featured in Ford EcoBoost engines builds on existing petrol engine knowledge, and offers customers a more affordable alternative to reduce carbon emissions than equivalent hybrid or diesel engine designs.' [OAR-2009-0472-7165.1, p.3]

Turbocharging enables this downsizing by restoring horsepower and torque rating. It is estimated that turbocharging enables about 30 to 40 percent engine downsizing, yet delivers enhanced performance from a smaller engine with fewer cylinders than is possible with a non-turbocharged engine. If cylinder count is reduced, the cost savings in parts and assembly offset the costs of turbocharging. Replacing a 6-cylinder dual overhead cam engine with a 4-cylinder turbocharged engine may be cost neutral. Consideration of the potential to decrease cylinder count and offset costs should be included in calculations for fleet fuel economy and implementation costs. [OAR-2009-0472-7165.1, p.3]

HTS used four different methods to estimate the fuel economy benefits and degree of engine downsizing made possible by gasoline engine turbocharging.

(1) Production Vehicle Data - US Market: HTS selected vehicles for sale in the U.S. for comparison when turbocharged, downsized engines were offered as an option instead of larger, non-turbocharged engines. HTS used data published on manufacturers' websites for comparison. For example, we compared the fuel economy of the following vehicles when offered for sale with and without turbo option: Passat, Passat Wagon, Mercedes E and C class as well as CLK, and Audi A4. The scatter in the data is wide because turbocharging is sometimes used for 'drivability' and sometimes for fuel economy. Also, this is not a strictly 'back to back' comparison because other changes such as direct injection instead of port injection are also sometimes made. Nevertheless, the data is illustrative because engine downsizing and turbocharging are the primary fuel economy mechanisms. The data from these six vehicles show about 40 percent downsizing and about 20 percent fuel economy improvement. [OAR-2009-0472-7165.1, p.4]

(2) Production Vehicle Data - E.U. Market: We similarly analyzed the cost and fuel economy results from vehicles for sale in Europe, including Renault Clio, Volvo S80, VW Golf, Opel Astra, and Audi A6. When comparing turbo and non-turbo options, it was seen that fuel economy improvement was 12 to 18 percent with 20 to 25 percent downsizing when the turbo option was selected. [OAR-2009-0472-7165.1, p.4]

(3) Back-to-Back Comparison - FEV Study: A study published by the power train consulting firm FEV supports HTS' s assertion that fuel economy improvement is in the

range of 15 percent when turbocharging and downsizing are employed by vehicles. The variation in production vehicle data due to changes in several design parameters and due to different design objectives has already been noted. HTS offers to EPA and NHTSA for their consideration a study performed by FEV which tested specifically the fuel economy improvements utilizing downsized engines with turbocharging. In the study FEV replaced the original, nonturbocharged engine with a 20 percent and then a 40 percent downsized, turbocharged engine. FEV observed a 13 percent and 18 percent improvement in fuel economy from these downsizing steps. FEV observed this improvement even though the compression ratio was reduced to enable high engine boosting. This study is the closest 'back to back' comparison that appears to be available. [OAR-2009-0472-7165.1, p.4]

(4) Vehicle Simulation: HTS conducted a methodical simulation of the effects of downsizing to illustrate the benefits of turbocharged engines. First, HTS collected data on fuel consumption maps of conventional, non-turbocharged and turbocharged engines. HTS then averaged, normalized, and interpolated these data to construct fuel consumption maps of a large displacement, non-turbocharged engine and two downsized, turbocharged engines of the same power rating. Significantly, HTS analysis of this data established that the fuel consumption of gasoline engines rises sharply as load is reduced. In downsized, turbocharged engines this rise is below the majority of operating points for typical drive cycles, resulting in significant fuel consumption reduction. [OAR-2009-0472-7165.1, pp.4-5]

HTS selected a state of the art vehicle for this simulation. HTS did not change vehicle specifications when it replaced the original, non-turbocharged engine with progressively downsized turbocharged engines. We used simple equations for aerodynamic drag, rolling resistance, and acceleration losses, along with a fixed passenger compartment load, to calculate the engine speed and torque at each point of the FTP-75 cycle. HTS then used this data to obtain the fuel consumption values from engine data maps second-by-second through the FTP cycle. The consumption was summed to determine the total fuel used over the cycle, resulting in 13 percent fuel economy improvement for 20 percent engine downsizing and 23 percent improvement for 40 percent downsizing. [OAR-2009-0472-7165.1, p.5]

Each of these four methods shows consistently that 15 to 20 percent improvement in fuel economy and 30 to 40 percent reduction in engine displacement are possible with the use of turbocharging. HTS plotted all four data sets on the same graph and fitted a curve through the combined set. This graph is shown in Figure 1 and confirms the benefits of turbocharging, i.e. downsizing, and fuel economy improvement. [OAR-2009-0472-7165.1, p.5]

These four methods all produce similar results: that turbo downsizing enables significant fuel economy improvement when engine performance is maintained. HTS encourages EPA and NHTSA to accurately reflect the true benefit of turbocharging in published data. We believe these benefits to be in the range of 13 to 20 percent for 20 to 40 percent engine downsizing. [OAR-2009-0472-7165.1, p.6]

HTS supports EPA's current designation of the turbocharger as an emission related part under section 207 of the Clean Air Act as described by EPA in Federal Guidance. EPA identifies turbochargers as an example of other parts of your vehicle which have a primary purpose other than emissions control but which nevertheless have significant effects on your vehicle's emissions.' CO2 emission reduction is achieved as a direct result of the possibility to downsize a turbo boosted engine, and not due to the turbocharger itself. [OAR-2009-0472-7165.1, p.7]

EPA Response:

Turbocharged and downsized engines are considered an important technology for the reduction of greenhouse gas emissions. The effectiveness of this technology will continue to be evaluated as certification data is collected.

Organization: National Automobile Dealers Association (NADA)

Comment:

When calculating technology costs, all dealer costs-of—sales should be accounted for in "dealer profit." The finance costs paid by over 90% of consumers also must be properly accounted for, as should unique costs characteristics associated with leases and fleet purchases. [OAR-2009-0472-7182.1, p.10]

Costs associated with design changes necessary to maintain vehicle performance, capability, and utility in conjunction with fuel economy/GHG technology improvements must be accurately accounted for. Monetizing these costs captures the degree to which consumers will forgo new vehicle purchases that fail to meet their needs and instead elect to hold onto older vehicles longer, or to access the used vehicle marketplace. Importantly, these marginal costs will result in marginal decreases in energy security and environmental benefits. [OAR-2009-0472-7182.1, p.10]

Future fuel price projections are the most critical lynchpin to determining the value of fuel savings and the benefits of National Program. NHTSA and EPA should continue to rely on the U.S. Energy Information Administration's (EIA) most recent reference case fuel price projections. Of course, as demonstrated by the many years where EIA's projections fell above or below reality, forecasting future fuel prices is far from an exact science. Despite the inherent volatility and uncertainty of fuel prices, the National Program would be remiss to not use the very best models and data available or to rely on "high" or "low" price case projections that are inherently not probabilistic. [OAR-2009-0472-7182.1, p.10]

Criteria pollutant reduction benefits associated with the proposed National Program may be overstated as the negative impact of inhibited fleet turnover does not appear to be accounted for. 74 Fed. Reg. 49674-5. With respect to GHGs, only any domestic impacts of reducing the social costs of motor vehicle CO2, should considered given that EPCA focuses on U.S. energy security, and all other costs and benefits evaluated with respect to

CAFE standards are domestic only. NHTSA is not justified in moving away from its prior practice in this regard. [OAR-2009-0472-7182.1, p.10]

A discount rate of at least seven percent (or higher) should be used to estimate future prospective benefits of the National Program. Financing rates on motor vehicle loans are indicative of appropriate discount rates since they reflect the real-world opportunity costs faced by consumers when buying vehicles with greater fuel economy costs associated with them. An accurate analysis of historic loan rates and a justifiable projection of retail loan rates for MY 2012-26 should be conducted and used. Importantly, using too low of a discount rate, like using too high fuel price projection, will result in an overly ambitious National Program, depressed new motor vehicle sales, and lower than projected fuel savings and GHG reduction benefits. [OAR-2009-0472-7182.1, p.11]

EPA Response:

Regarding the NADA comment that dealer costs-of-sales should be accounted for in "dealer profit", the agencies have included dealer costs-of-sales (selling costs) in the indirect cost multiplier (ICM)—which makes up part of the final technology costs—as a unique element. There is no compelling reason to include those costs in the "dealer profit" element of the ICM. As for the finance costs paid by consumers, it is important to note that from a social perspective, the costs of the rule are the technology costs themselves and do not include the finance costs. While those costs are incurred by consumers, they are merely transfer costs from the perspective of regulatory cost analysis. We have included financing costs in our vehicle sales impacts analysis since costs there are not social costs but rather personal costs.

Regarding NADA's comment on vehicle utility, it is important to note that the agencies have made every effort to craft a national program that will have no impact on vehicle utility. Vehicle performance characteristics should not change as a result of this rule. As noted elsewhere (see, e.g. comment response 5.13), EPA accounted for costs needed to preserve existing vehicle utility in its analyses, for example by retaining features relating to performance in the baseline vehicle packages used as the basis for analyzing technology cost and effectiveness. That said, vehicle performance characteristics may well change due to consumer demand, but that would not be the result of the rule.[1] In fact, EPA's analysis of the rule's impact on vehicle sales suggests that sales will increase as a result of the rule because consumers will find the new, more efficient vehicles more attractive than older vehicles. In short, we disagree with this comment and the premise that compliant vehicles will have less utility and/or be less attractive to consumers.

Organization: General Motors

Comment:

[1] We note that CARB in its public comments "agrees with the agencies' assumption that vehicle attributes of performance, carrying capacity, safety, or comfort would not change under this regulation."

The agencies developed a baseline fleet for cars and trucks and then applied fuel economy technologies to the fleet to create the most cost effective set of standard curves. In this assessment, assumptions are made about the effectiveness of each applied technology. Included herein is a detailed analysis of the technologies applied to large pickups. The analysis shows that the effectiveness of many of these technologies is significantly overstated. Therefore GM recommends that the obligation for large pickups, in each year of the rule, be reduced. [OAR-2009-0472-6953.1, p.9] [[See pp.9-16 of OAR-2009-0472-6953.1 for a detail analysis of the following technologies: Engine Downsizing and Boosting (Turbocharging) applied to a Full-Size Truck; Variable Valve Timing or Valve Lift; 12V Flywheel Stop/Start System; and, Dual-Clutch Automatic Shift Manual Transmission (DCT)]]

EPA Response:

Based on a careful review of GM's entire submission, EPA believes that the GM analysis is largely consistent with EPA's analysis and publically data cited within Chapter 3 of the Technical Support Document for this rule, when GM's analytical results are compared on the basis of similar curb-weight and similar vehicle performance to what was used within EPA's analysis. In the specific case of turbocharged gasoline direct injection engines, EPA estimates of CO2 reduction are less than publically available data for some turbocharged direct-injected engines for future light- truck applications (see TSD Chapter 3). We agree with GM's comments that it is unlikely that dry-DCTs will be used in light-truck applications.

EPA's estimated effectiveness for start-stop systems is relatively conservative when compared to publically available data and appears to be generally consistent with GM's analysis.

EPA's estimated effectiveness of variable valve timing and lift is similar to or in some cases overlaps GM's analysis. Insufficient detail was provided within GM's analysis to determine the reason for any differences.

We continue to believe that wet-DCTs provide CO2 benefit, based on the results in our analysis within Chapter 3 of the TSD and the 2008 EPA Staff Report.

Organization: International Council on Clean Transportation

Comment:

EPA and NHTSA used different models to assess costs and benefits. NHTSA used the Volpe model, which they have evolved over their last several CAFE rulemakings. EPA has developed an independent model with some significant simplifications and that does not depend on confidential manufacturer product plans. While both models are capable of

properly assessing costs and benefits, ICCT prefers the overall EPA approach because of its relative simplicity and better transparency.

ICCT is generally in favor of simplifying models, as long as accuracy is maintained. For example, the EPA model assesses technology over 5 year redesign periods, instead of for each model year. This is a good simplification, as manufacturers' redesign plans change frequently and annual assessments are likely to be no more accurate than assessing technology over redesign periods.

A simplification that does not work as well is that EPA appears to assign the same technology package improvements to each manufacturer. EPA's model begins by determining the specific CO2 emission standard applicable for each manufacturer, based on the footprint and projected sales of each model, and accounts for differences in technology for the baseline model year. However, the model implicitly assumes that every manufacturer will implement the same technologies in the same order in the future based on industry $/kg estimates, without looking at the specific knowledge and experience base for each manufacturer. This simplification may be missing important differences between manufacturers. For example, Volkswagen is unique in having heavily invested in diesel engines in the U.S. for decades and having a substantial share of diesel engine in their fleet, but is far behind some manufacturers in developing and introducing hybrid vehicles. Given their existing investments, Volkswagen's future technology mix is likely to be very different from most manufacturers. Similarly, Honda has been an industry leader in variable valve timing and cylinder deactivation, Toyota a leader in hybrids, Nissan a leader in continuously variable transmissions (CVTs), and Ford and a few other manufacturers have been especially aggressive in developing direct injection, turbocharged gasoline engines. NHTSA's model is capable of assessing leadtime, benefits, and costs independently for each manufacturer. While this is not critical for assessing overall costs and benefits, it does help to evaluate competitive impacts.

In the long run, the agencies should cooperate in developing a single model for setting vehicle standards, incorporating the best features of each model while maintaining as much simplicity and transparency as possible.

EPA is implicitly applying a separate learning curve to indirect costs, though the reduction in the long term multiplier. However, as indirect costs are a multiple of direct costs, learning curves applied to direct costs also reduce indirect costs. How does the reduction in indirect costs due to learning for direct costs interact with the reduction in the long-term multiplier?

[OAR-2009-0472-7156.1, pp.17-18]

EPA Response:

The intent of this rulemaking is to provide the most value to the consumer while still meeting the standard. A manufacturer has many choices to meet the standard based on

many factors such as corporate expertise, innovative technologies, consumer choice, etc. The goal of the EPA model is to define the lowest cost technology route for each baseline vehicle in order for the manufacturer to meet the standard. The manufactures may implement any common or proprietary technologies in any order they choose as long as the standard is met.

Regarding learning curves, mathematically, the comment is not incorrect. The indirect cost multipliers are proxies for having more detailed information about the indirect costs associated with a new technology. The method, derived from the longstanding use of retail price equivalent multipliers, estimates indirect costs as a proportion of direct costs. The learning curve effects are applied only to direct costs in our analysis. However, if direct costs go down, all else equal, the assumption of this approach is that indirect costs will go down as well.

Organization: Gluckstern, Henry

Comment:

There is ample technology on the shelf to meet the proposed standards without unduly burdening the industry. If automakers had acted to build more efficient cars and trucks, consumers would not have been hit as hard by $4-a-gallon gas a little over a year ago. It is time to put fuel efficient vehicles people want to buy on the market. No passenger car should be getting fewer than 50 miles to the gallon in the year 2010, but precious little of the world's fleet achieves such a number. [OAR-2009-0472-5258, p. 2]

EPA Response:

EPA appreciates these comments as we move toward reducing greenhouse gasses and dependence on limited natural resources.

Organization: Eadie, R. Frank

Comment:

I do think that -- well, it's going to need to -- let me say that one thing that could be done and I would really like to ask that the EPA consider restrictions on idling. Idling is a very, very large source of pollutants in Manhattan, and because you spend so much time in traffic, there's vehicles spending so much time idling, especially buses and trucks which, of course, put out very toxic things along with the CO2 that they're admitting, and so it's -- you know, I would suggest that, for example, that there be automatic idle -- idling restrictors on vehicles and that that be mandated, say after 20 seconds of idling, the engine would automatically shut off on gasoline, diesel and fossil fuel burning engines. That would save [EPA-HQ-OAR-2009-0472-4621, p.170] a lot of lives in a fairly short period of time, and certainly we have the technology nowadays that, for example, the engine could be restarted by simply pushing the accelerator. That happens in the hybrid vehicles now. So it should be mandatory on all new vehicles, maybe retrofitted after, you

know, 2015 or something, that all vehicles be retrofitted with that kind of a thing. This is, of course, a major problem. It's not just New York that has congestion problems. [EPA-HQ-OAR-2009-0472-4621, p.170]

So I have one other. I want to ask that you communicate with your leaders at all levels about this new rule, that you seriously look at the new reports that are coming out and begin to think in a very friendly way, you basically have to -- I'm actually old enough to remember the Second World War, and, you know, what happened then is what has to happen now. We have to go on a war footing, a real war footing, not an Iraq war kind of footing, but a real footing where the President calls together the industry leaders and the best scientists and thinkers and organizers and works out a reorganization of the economy. That really is what needs to happen, and nothing short of that is going to get us close to being able to survive, and that's what I wanted to say. [EPA-HQ-OAR-2009-0472-4621, p.175]

EPA Response:

EPA has considered a technology that reduces CO2 emissions at idle and we anticipate that the technology will be applied in the timeframe of the final rule. The technology is referred to as Start-Stop and is described in detail in the Joint Technical Support Document (TSD). The following is an excerpt from the TSD and is a brief summary of how it works:

- *12-volt micro-hybrid (MHEV)* – also known as idle-stop or start stop and commonly implemented as a 12-volt belt-driven integrated starter-generator, this is the most basic hybrid system that facilitates idle-stop capability. Along with other enablers, this system replaces a common alternator with an enhanced power starter-alternator, both belt driven, and a revised accessory drive system.

While this rule does not mandate the implementation of any specific technology, we recognize that CO2 emissions at idle are a significant contributor to a vehicle's overall emissions performance. EPA modeling results show an overall penetration rate of this technology in the 2016 MY to be 2% for cars and 4% for trucks to meet the stringency set forth by this rule.

4.5 Economic Assumptions

4.5.1 Consumer Welfare and Valuation of Fuel Savings

Valuation of Fuel Savings

Organization: Consumer Federation of America
Institute for Energy Research
Mr. Richter – Environmental Capital Partners
Union of Concerned Scientists

EPA-2022-001065

United Auto Workers
University of Michigan Transportation Research Institute (UMTRI)
Investor Network on Climate Risk
University of Pennsylvania, Environmental Law Project
State of New Jersey
James Adcock

Comment:

Consumer Federation of America

Our analysis of opinion polls and purchase decisions over the past half-decade shows that consumers want a great deal more fuel economy than automakers have been willing to supply (see Sections II and IV). The recent economic analysis of fuel economy by NHTSA/EPA suggests why consumers want more fuel economy. The cost of increasing fuel economy to 38.1 miles per gallon by putting more fuel saving technology in cars and trucks is well below the amount consumers are willing to pay and the cost of gasoline. [OAR-2009-0472-7272.1, p.5]

Our analysis of the failure of the market to yield an efficient outcome with respect to energy efficiency presented in Section III has four critical purposes in these comments and implications for the process of standard setting for both fuel economy and tailpipe emissions. First, it demonstrates that the consumer welfare gains, which account for almost 80 percent of the total societal welfare gains, should be included in the cost-benefit analysis. Without these gains, a benefit cost framework would justify little if any increase in fuel economy standards. The nature and extent of the market failure dictates the degree of confidence in the consumer welfare gains. [OAR-2009-0472-7272.1, p.6-7]

Exhibit I-1 also shows the large benefits that have been left on the table as a result of the dire circumstances of the industry. The proposed rule delivers far smaller benefits than could be achieved if the condition of the industry were not holding the agencies back.

• The societal benefit would be $50 billion larger. • The consumer pocketbook savings would be $37 billion larger. • Gasoline consumption would be 32 billion gallon lower.• Greenhouse gas emissions would be 13 billion tons lower.

Our analysis of opinion polls and purchase decisions over the past half-decade show that consumers want a great deal more fuel economy than automakers have been willing to supply. The NHTSA/EPA analysis shows that the cost of higher fuel economy is well below the amount consumers are willing to pay given the cost of gasoline. The cost of saved energy, a concept frequently used in the analysis of energy efficiency, is also far below the current cost of gasoline. [OAR-2009-0472-7272.1, p.10]

I want to briefly highlight today one issue that I think is of paramount importance as we move forward. The agencies must adopt a firm analytic framework that recognizes that

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fuel economy standards enhance consumer welfare. The billions of dollars of consumer welfare gains estimated by the agencies in their analysis are real and substantial. The final rule should clearly acknowledge not only the empirical estimates of these gains, it should also conclude that the theoretical justification for incorporating consumer welfare gains into the rulemaking is clear and solid.

Now, in the proposed rule the agency rejected claims that consumer welfare gains shouldn't be included on the basis of the empirical finding that the models are too imprecise. You're perfectly right to say that, but that is too weak of a rationale.

These models have a fundamental theoretical flaw. In order to conclude that consumers do not enjoy increased welfare as a result of fuel economy standards, one must assume that consumers have full information and perfect foresight in their vehicle purchase decisions, and that the supply side of the market gives them a full, balanced, and unbiased range of choices to meet their needs. None of these assumptions is correct, and that's why we have a $100 billion market failure.

In fact, as we'll show in our comments, there's a broad range of theoretical and empirical evidence to support the conclusion that there is a substantial market failure with respect to efficiency and that fuel economy standards enhance consumer welfare.

Institute for Energy Research

These estimates are flawed. For example, EPA is claiming consumers would save $90 [billion] in fuel costs because of these regulations. These savings should not be considered a benefit under this analysis because consumers' voluntary, market choices illustrate they prefer other vehicle attributes more than fuel economy. [OAR-2009-0472-7225.1, p.9]

Consumers demand a certain fuel economy, but consumers also want to maximize other attributes such as performance and size (then again, maybe the fuel economy of these cars is actually higher than consumers' actual preferences because of CAFE standards). If consumers really demanded very fuel efficient cars, Honda would still make a car today that gets better gas mileage than the 1985 Honda Civic Coupe HF. The Civic Coupe HF got nearly 50 mpg on the highway a quarter century ago. Today, the Honda's most fuel efficient car is a hybrid sedan Civic that gets 40 mpg in the city and 45 mpg on the highway. [OAR-2009-0472-7225.1, p.10]

Also, if there were greater consumer demand for fuel efficient cars, it is likely European versions of automakers' cars would be sold in the United States. For example, in Europe, Ford sells the Fiesta ECOnetic which gets 65 mpg. [OAR-2009-0472-7225.1, p.10]

Because U.S. consumers value other attributes in their cars more highly than fuel economy, EPA's cost-benefit analysis should not include the $90 billion in savings from fuel economy as a benefit, or at the very least, it should include the $90 billion in savings,

but offset it with an even larger *negative* figure to account for consumers' unhappiness with the reduction in their options. [OAR-2009-0472-7225.1, p.10]

The issue of consumer welfare due to vehicle attributes is crucially important: It may mean the difference between a program that confers net benefits or net costs. If the loss in consumer welfare (due to forced change in vehicle attributes) exceeds $3 billion by 2030, then the net social benefits of the proposed rule may be negative, because the low end of the estimated benefits (excluding fuel savings) are $21 billion, while the other estimated costs of the program are $18 billion by 2030. [OAR-2009-0472-7225.1, p.10]

Mr. Richter - Environmental Capital Partners

Secondly, as was mentioned in the earlier panel, cars that get better gas mileage save the consumer money in the long run. When oil prices soar, even a free car becomes unaffordable if you can't pay to fill the car up. If you look at the Cash For Clunkers, for instance, the top ten models purchased get almost 30 miles to the gallon. The average mile traded in got 15.8. That's a 58 percent improvement because those purchases got an average of 24.1 miles per gallon. Energy efficient cars represent more than an environmental statement. For financially challenging times, they're an economic necessity. [EPA-HQ-OAR-2009-0472-4621, p.163]

Union of Concerned Scientists

According to UCS analysis, the standards proposed in the NPRM will reduce oil consumption from U.S. light-duty vehicles by 1.3 million barrels per day in 2020. This translates into a savings of nearly 20 billion gallons of gasoline in just one year.

By reducing oil consumption, consumers will save money at the gas pump. Even if prices stay at current values, approximately $2.50 a gallon, consumers will save $32 billion in 2020. UCS calculates these savings on a net basis and includes the additional cost of fuel saving technology. This demonstrates consumers still recognize additional benefits even with a significantly higher purchase price of a new vehicle. If prices return to higher levels, such as $4 a gallon, savings would nearly double to over $61 billion. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 92-3.]

In addition to the consumer savings, these standards will achieve a critical reduction in the heat-trapping gases that cause global warming. Currently, cars and light trucks account for nearly 20 percent of total U.S. global warming emissions. These standards will reduce greenhouse gas emissions from cars and light trucks by 215 million metric tons of carbon dioxide equivalent in 2020. That's about the equivalent of taking 32 million vehicles off the road in that year. And as the fleet turns over, the benefits will only grow with time. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 93-94.]

All of our analysis is based on assuming the fleet achieves the 250 grams per mile fleet-wide average in model year 2016, a level equivalent to approximately 35.5 miles per gallon and the NHTSA standard of 34.1 in that year. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 94.]

United Auto Workers

Fourth, the UAW commends the agencies for the extended discussion of consumer benefits and losses in the Notice of Proposed Regulation, the Draft Regulatory Impact Analysis, and the Draft Joint Technical Support Document. The UAW agrees with the agencies that much more work must be done in this area, and believes that there is a major omission in the cost-benefit analysis because there is no value given to consumer and producer welfare losses. While the benefits of fuel savings to consumers are apparent and easily calculated, consumer and producer welfare losses, though apparent, are more difficult to assess. [OAR-2009-0472-7056.1, p.3]

Given that the benefits to consumers from reduced fuel expenditures, reduced fueling time, and increased driving together comprise fully 89 percent of the benefits from these proposed rules and dwarf the energy security and environmental benefits, the UAW believes remedying this critical omission should be a top priority for future rulemakings. To have balanced rulemaking, it is important that the obvious but unvalued losses for consumers and producers be included in any cost-benefit analyses. We appreciate the agencies' willingness and stated commitment to attempt to develop methods to value both consumer and producer losses in future rulemakings. [OAR-2009-0472-7056.1, p.4]

The UAW would suggest that the most fruitful approach is a close examination of consumer and producer behavior in the passenger car market. The existing CAFE standard of 27.5 miles per gallon has not been binding on the vast majority of producers for many years. This means that in all likelihood consumers have been demanding the full level of fuel economy that they value in relation to other vehicle characteristics, and that producers have been free to add features to vehicles that will maximize their profits. [OAR-2009-0472-7056.1, p.4]

Hence, any regulation that that forces producers to market and consumers to buy passenger cars with fuel economy that exceeds this "revealed preference" generates both consumer and producer losses. Consumers have losses because they are forced to have additional utility in the form of fuel efficiency when in most cases they have clearly chosen otherwise. Producers suffer losses because they are forced to offer additional utility in the form of fuel efficiency that customers do not want and are therefore unwilling to pay the full cost of, and due to lost profits from the opportunity cost of not being able to add features that provide utility for which consumers are willing to pay the full cost. [OAR-2009-0472-7056.1,p.4]

This logic gains considerable strength from the competitive nature of the passenger car market in the United States, and the fact that the market has become much more

competitive over the last decade. Consumers have a wide and growing range of choices, and any producer that saw a potential advantage to offering more fuel-efficient vehicles would do so. Indeed, many have, resulting in average fleet-wide passenger car fuel efficiency that exceeds the existing regulations, but is less than the levels in this proposed rule. Although the agencies performed the technology analysis in a manner that attempted to maintain current vehicle-class utility, this only begs the question of what vehicle features consumers might prefer, besides additional fuel efficiency, for the extra cost associated with achieving that fuel efficiency. [OAR-2009-0472-7056.1,p.4]

University of Michigan Transportation Research Institute (UMTRI)

Over the past few years, I have authored or co-authored a number of research reports on the impacts of fuel economy regulations and fuel prices on automaker costs, profits, and employment. Today I want to bring your attention to two recent reports: [OAR-2009-0472-3651.1, p.1]

The first study, "CAFE and the U.S. Auto Industry Revisited" (written in partnership with Citi Investment Research & Analysis, Ceres, the Investor Network on Climate Risk, the Planning Edge, and Meszler Engineering Services) was recently released by Citi Investment Research & Analysis. [OAR-2009-0472-3651.1, p.1]

The study analyzed two regulatory scenarios for light vehicles: CAFE 2020—an industry-wide target of 35 mpg in 2020; and "national Pavley" (equivalent to the National Program)—an industry-wide target of 35 mpg in 2016. In each scenario, we estimated the impacts on sales, costs, and profits relative to a baseline forecast. [OAR-2009-0472-3651.1, p.1]

The analysis found that the proposed National Program is likely to benefit both the Detroit 3 and the Japan 3 by boosting profits, based on the relative value consumers put on fuel costs compared to vehicle price, the future price of fuel, and the combined direct and indirect costs incurred to improve fuel economy. The study found that by producing more competitive, fuel-efficient fleets in the coming years the Detroit 3 would be able to slow or reverse their market share erosion that has accelerated in recent years. [OAR-2009-0472-3651.1, p.2]

According to the study, the National Program is likely to increase the Detroit 3's profits by $3 billion per year, and to increase the Japan 3's profits by $0.8 billion per year. Unit sales by the Detroit 3 are predicted to increase by the equivalent of two large assembly plants, thereby saving U.S. autoworker jobs. [OAR-2009-0472-3651.1, p.2]

Consumers will also benefit, since the fuel savings from more efficient cars – even at the present gas price of $2.50 a gallon – will more than offset the higher prices for vehicles incorporating new fuel-saving technologies. Under the National Program, the present value of the fuel saved will be greater on average than the increase in purchase price on average associated with the new fuel saving technology. [OAR-2009-0472-3651.1, p.2]

The second study, "Fixing Detroit: How Far, How Fast, How Fuel Efficient" (which my colleague Rob Kleinbaum co-authored) was completed in June 2009. [OAR-2009-0472-3651.1, p.2]

The report modeled the impact of three different fuel economy standard increases—30 percent (35 mpg), 40 percent (37.7 mpg) and 50 percent (40.4 mpg)—on the profitability and sales of the auto industry. The model estimated the impact of improving fuel economy on the costs of producing vehicles, on the retail prices of vehicles, and on consumer demand. We used the most recent and accepted estimates of all the key parameters, but since there is debate on many of these values, the report conducts an extensive sensitivity analysis on the results. [OAR-2009-0472-3651.1, p.2]

Results indicated that the Detroit 3 would have increased profit (over the baseline) in all three scenarios, and their profit gains would be larger the more aggressively they pursue improvements in fuel economy. The Japan 3 (Toyota, Nissan, and Honda) would also gain profit from pursuing higher fuel economy, but their gains would be smaller than those of the Detroit 3. The profit gains are possible because higher fuel economy is worth more to consumers than it costs the automakers to provide. [OAR-2009-0472-3651.1,p.2]

The market for clean, fuel-efficient vehicles is not a perfectly competitive market in which consumers and automakers have perfect foresight and perfect computation ability. In a perfectly competitive market, producers would have complete knowledge of consumers' willingness to pay for all vehicle attributes as well as complete knowledge of all technologies to produce vehicles with any feasible combination of attributes.[OAR-2009-0472-3651.1, p.2]

However, recent events have demonstrated that automakers have neither complete knowledge not perfect foresight. The shifts in consumer demand toward wanting more fuel economy caught automakers by surprise, and significantly contributed to the financial failure of GM and Chrysler. Consumer demand began to shift at least as early as 2002, yet automakers, the Detroit 3 in particular, did not respond with new technologies and products until 2007. The failure to anticipate and respond to the shift in consumer demand is clear evidence that automakers seriously underestimated the consumer value of fuel economy. [OAR-2009-0472-3651.1, p.2]

The scenario with 30 percent improvement in fuel economy (to 35 mpg) is roughly equivalent to the proposed standards under the National Program. We estimated the average cost per vehicle of improving to 35 mpg to be $1,715 and the average consumer value added per vehicle to be $2,578. [OAR-2009-0472-3651.1, p.3]

[UMTRI also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 33-36.]

Investor Network on Climate Risk

As long-term investors, and as members of the Investor Network on Climate Risk (INCR), which represents over $8 trillion in assets, we are writing to express our strong support for the National Program (the proposed fuel economy/GHG emissions standards). The proposed regulation essentially adopts the GHG emissions standards that CA had proposed, and will require a fleetwide average of approximately 35.5 mpg in 2016, representing an approximately 40% increase in fuel economy over present standards.

In particular, we would like to bring your attention to the findings of the Citi report, published on October 13, 2009. This report was produced in partnership with INCR, Ceres, and the University of Michigan Transportation Research Institute (UMTRI), and addresses the impacts of the National Program on automakers. The Citi report finds that the recently proposed vehicle CAFE/GHG standards will likely boost profits and slow the loss of market share of Detroit's Big Three automakers.

Key findings of the report include the following: Automakers' variable profits will be greater (as compared to the case under no new regulation) under the National Program.:

The standards are likely to increase Detroit's competitiveness: 1. The Detroit Three will be able to mitigate market share erosion by producing more competitive fuel-efficient fleets in the coming years. 2. The Detroit Three do better than Japanese Three under the National Program under most scenarios. 3. Sales by the Detroit Three are expected to increase by the equivalent of two large assembly plants, thereby saving U.S. autoworker jobs.

Consumers will benefit as well since fuel savings from more efficient cars – even at the present gas price of $2.50 a gallon – will more than offset slightly higher prices for vehicles incorporating new fuel-saving technologies. [OAR-2009-0472-7243.1, p.1]

[Investors Network on Climate Risk also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 34-36.]

University of Pennsylvania, Environmental Law Project

3. Expected Costs of Implementation of the Proposed Rule
As previously mentioned, some groups worry about the economic costs of rule implementation. They argue that the proposed rule could add too much to the price of new cars. This will lead, they say, to people sticking with their older, gas-guzzling cars instead of buying new ones, thereby undermining the primary goal of the rule of lowering vehicle emissions [OAR-2009-0472-7286.1, pp. 20-21].

However, most stakeholders, including the auto industry and Auto Dealers Association support the rule and agree that this standard can be met without undue costs. They also point to the benefits of a predictable national standard that will help to lessen uncertainty for the auto industry when they develop new models, and lower compliance costs by avoiding a patchwork of rules between the states. Furthermore, it will allow them time to

build improvements into new models during the normal production and design process, which will minimize the additional costs imposed. [OAR-2009-0472-7286.1, p. 21]

Consumers also will not only be spared from extra costs, but will save money in the long run because of the fuel efficiencies of their new cars. [OAR-2009-0472-7286.1, p. 21]

State of New Jersey

Finally, we agree with the federal government's assessment that under realistic assumptions, the private gains to the consumer from the joint proposal (e.g., savings in fuel economy), together with the social gains (e.g., reduced health costs associated with pollution, reduced reliance of foreign oil sources, etc.), will significantly outweigh the incremental initial costs of providing these newer advanced technology vehicles. [OAR-2009-0472-7109.1, pp.5-6]

Union of Concerned Scientists

It was disconcerting to read in the NPRM that there was some debate about the role of private benefits in assessing the total benefits and costs of the program. The argument against including these benefits boils down to an attempt to force the assumption of a perfect free market on to a situation that is far from it. As noted in the NPRM, if the car market had all the features of a perfect free market (e.g. full information, perfect foresight, perfect substitutes, etc.) then there would be an argument for excluding the private benefits. But we know that consumers can not have full information and perfect foresight. For example, EPA window stickers and the EPA Fuel Economy Guide note that "Your Fuel Economy Will Vary." Further, not even the government's Energy Information Agency can accurately predict gasoline prices. Consumers also cannot predict future traffic patterns, changes in job location and many other factors that will influence how much they could save on gasoline from various vehicle choices. [OAR-2009-0472-7181.1, p.15]

Union of Concerned Scientists

Further, consumers save money under these standards from the minute a new vehicle is purchased. Currently approximately 70 percent of consumers purchase a new vehicle using loans. Assuming a typical five year loan at 6 percent interest, savings at the gas pump due to higher fuel economy are greater than the additional cost of technology each and every month the consumer owns the vehicle, even if gas prices were to fall to a modest $2 a vehicle. In other words, our analysis shows that consumers will save money from the moment they roll off the lot under these standards. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 93.]

James Adcock

Does CAFE in fact represent a negative to consumer utility or rather a protection of the consumer's interests in the face of irrational discounting by the consumer? Also, the utility of higher fuel economy DOES pass on to secondary owners - NHTSA also needs to represent the interests of secondary owners who are even more unable to bear the burden of high fuel costs.

EPA Response:

While most of these commenters argue that this rule will save consumers money, because the present value of fuel savings greatly outweighs the technology costs, the Institute for Energy Research and the UAW argue that, if consumers wanted more fuel savings, the market would have provided them. These two commenters suggest that there must be a loss associated with improving fuel economy, because many consumers do not purchase highly fuel-efficient vehicles already on the market.

EPA distinguishes between the fuel savings that consumers consider when buying vehicles and the fuel savings that consumers will get after the purchase. These two values need not be the same. As discussed in Section 5.13.1 of this Response to Comments document, as well as Section III.H.1 of the Preamble and Section 8.1.2 of the RIA, a number of reasonable explanations have been offered for the possible divergence between these two approaches to valuing fuel savings.

OMB Circular A-4 notes that "Economists ordinarily consider market prices as the most accurate measure of the marginal value of goods and services to society." The fuel savings that consumers will receive are directly measurable using market prices for fuel, while the values that consumers reveal through their purchase decisions are indirect measures and may therefore be less reliable.

EPA, along with most commenters on the rule, find that there are cost-effective fuel savings that the market has not at this time provided to consumers and includes those benefits in our analysis.

As discussed more in Section 5.13.1 of this Response to Comments document, as well as Preamble III.H.1 and RIA Section 8.1.2, EPA believes that any adverse effects on vehicle characteristics due to the rule are best considered in the context of the technology costs to achieve the standards, not the fuel savings.

The University of Michigan Transportation Research Institute and the Investor Network on Climate Risk argues that the Detroit auto makers, as well as consumers, will benefit from improved fuel economy in vehicles. While EPA's analysis of vehicle sales impacts (Preamble Section III.H.5 and RIA Section 8.1.1) is not able to distinguish effects for individual auto makers, EPA estimates that vehicle sales will increase in response to the rule.

Quantification of Consumer Welfare Impacts

Organization: New York University School of Law, Institute for Policy Integrity (IPI)

Comment:

Once an agency undertakes a cost-benefit analysis and relies on that analysis in its rulemaking, it cannot perform the cost-benefit analysis in an arbitrary and capricious manner. If a cost-benefit analysis used in rulemaking "fail[s] to consider an important aspect of the problem" or "runs counter to the evidence before the agency," a reviewing court will invalidate the rule under the Administrative Procedure Act. Perhaps crucially, NHTSA has clearly identified the potential lost consumer welfare as "an important component of the total private costs and benefits." [OAR-2009-0472-7232.3, p. 4]

Failing to quantify an important element in a cost-benefit analysis can constitute arbitrary and capricious action. A cost-benefit analysis must be as accurate as reasonably possible, and agencies must estimate costs and benefits in a responsible manner. Courts have criticized Department of Transportation rulemakings in the past for trying to justify a failure to quantify by citing uncertainty. In Public Citizen v. FMCSA, the court warned that:

The agency's job is to exercise its expertise to make tough choices about which of the competing estimates is most plausible, and to hazard a guess as to which is correct… Regulators by nature work under conditions of serious uncertainty, and regulation would be at an end if uncertainty alone were an excuse to ignore a congressional command. [OAR-2009-0472-7232.3, p. 4]

Similarly, in Center for Biological Diversity v. NHTSA, NHTSA believed the economic models on the benefits of reducing greenhouse gas emissions were too uncertain and inconsistent to support an explicit valuation. The Ninth Circuit Court of Appeals held that NHTSA's reasoning was arbitrary and capricious because "while the record shows that there is a range of values, the value…is certainly not zero." In the present rulemaking, the agencies also fail to quantify an important element of the cost-benefit analysis and thus unnecessarily expose themselves to legal challenges. [OAR-2009-0472-7232.3, p. 4]

EPA Response:

EPA does not accept the premise that a court must invalidate a rule as arbitrary if any cost-benefit analysis accompanying the rule fails to consider some important aspect of the problem. The uses to which cost-benefit analysis is put during the rulemaking determines the degree of judicial scrutiny to which such analysis is subject – a distinction overlooked by the commenter. Nor does EPA accept the premise that it has ignored some significant element – evaluation of consumer welfare costs and benefits – in establishing the standards.

In Center for Biological Diversity v. NHTSA, 538 F. 3d 1172 (9th Cir. 2008), the court was reviewing a rule where the standard was established using a type of marginal cost-benefit analysis such that individual inputs became output determinative. 538 F. 3d at

1199. Under such circumstances, the agency's failure to assign any value to a critical factor (valuation of reduced carbon emissions) was deemed arbitrary. Id. at 1202. (noting that the omission was both arbitrary and that the omission affected the stringency of the standard). In Public Citizen v. FMCSA, 374 F. 3d 1209 (D.C. Cir. 2004) the court found that the agency had outright failed to consider a critical statutory decision factor – driver safety – and so had acted arbitrarily. Id. at 1216-17. In *dicta*, the court also noted that a decision not to require use of a device to monitor compliance on cost-benefit grounds appeared arbitrary when the agency had made no attempt to quantify or otherwise estimate either the costs or benefits of using the devices. Id. at 1221-22.

These cases are readily distinguishable from the situation here. Although EPA has conducted a cost-benefit analysis for purposes of Executive Order 12866, and notes that the results of that analysis support the overall reasonableness of the standards, the cost-benefit analysis is not the main, much less sole, decision criterion. Pursuant to section 202 (a) (1) of the Act, EPA has considered such factors as available technology and its level of performance, lead time necessary to install the technology, the costs of doing so to both manufacturers and consumers, the cost-effectiveness of the controls, implications for vehicle safety, and other considerations. See e.g. section III.D of the preamble to the final rule. Thus, EPA is accorded the customary broad latitude in assessing and considering costs in adopting technology-based standards. See e.g. Kennecott v. EPA, 780 F. 2d 445, 456 (4th Cir. 1985).

Nor has EPA ignored the issue of consumer welfare. The issue is discussed at length at proposal at 74 FR 49602 and in the final rule and record in Preamble III.H.1 and RIA Section 8.1.2. If the commenter's point is that EPA has not monetized consumer welfare penalties, EPA's analysis argues that such penalties are estimated by the cost of additional technology. Any possible unquantified effects would affect estimation of the technology costs, which already take into account (by holding constant) effects on performance, safety, utility, and other attributes. Moreover, the value of the monetized fuel savings is a consumer welfare benefit. These benefits and costs are included in EPA's benefit-cost analysis set out in Preamble Section III.H. Consequently, EPA has considered and evaluated the effects of this rule on consumer welfare in a reasonable and non-arbitrary manner.

Consumer Vehicle Choice Modeling

Organization: American Council for an Energy Efficient Economy
California Air Resources Board
Institute for Energy Research
International Council on Clean Transportation
Natural Resources Defense Council
Union of Concerned Scientists
James Adcock
New York University School of Law, Institute for Policy Integrity (IPI)

American Council for an Energy Efficient Economy

The use of consumer choice models calibrated to historical sales data, as discussed in the proposal, is a sure recipe for the creation of a backward-looking policy and one that threatens the viability of auto companies. This approach ignores important factors such as past correlation between low fuel economy and desirable design features, the role of manufacturer advertising and consumer vehicle selection and evidence of recent shifts in consumer preferences as shown, for example, in the Cash For Clunkers Program. The discussion of consumer welfare in the agencies' proposal appears to raise a possibility that future progress in fuel economy could be jeopardized by improperly formulated economic concerns. Indeed, rapid progress toward a sustainable transportation sector is an economic imperative. This is a time for creative thinking as to how federal standards can best contribute to achieving the crucial and very challenging goals of major reductions in greenhouse gas emissions and in reliance on unsustainable sources of energy. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 147-148.]

Recommendations: 1. Acknowledge that the standard model of individuals' behaviors is deeply flawed, and apply it only when it is clear that it offers real insights to actual behavior; 2. Expand the investigation of consumer welfare to include up-to-date findings, including: work showing that consumers do not necessarily maximize utility, even absent evident barriers to doing so; impacts of advertising and incentives on vehicle choice; changing consumer valuation of vehicle characteristics; 3. Unless and until this research can be adequately incorporated in a quantitative model and peer-reviewed, exclude intangibles from the quantification of consumer welfare impacts; 4. Consistently represent in the rule and accompanying documents NHTSA's estimates that both sales and automotive jobs will increase as a result of the proposed standards.

California Air Resources Board

CARB agrees with the agencies' assumption that vehicle attributes on performance, carrying capacity, safety, or comfort would not change under this regulation. In response to the request for comment on how to explicitly estimate changes in consumer welfare, we believe it is possible to use consumer choice modeling to obtain a reasonable estimate. While EPA's DRIA thoroughly describes the variation in model types and results as well as the issue of consumer valuation of fuel savings, we support EPA's efforts to continue investigation of this type of methodology. Assumptions, data sources and collection methods, and model specification clearly drive many of the differences in model results. EPA's conclusion that the literature is inconsistent does not seem to have controlled for these varying factors. We believe a closer look will reveal that when models have similar objectives and specifications, they will produce repeatable results. EPA also questions the reliability of consumer choice models for their predictive power of future vehicle choices. While this is certainly a limitation of any forecast model, this can be mitigated by including stated preference data for technologies that are currently not in the marketplace, e.g. plug-in hybrids, fuel cell vehicles. [OAR-2009-0472-7189.1 p.6]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

Institute for Energy Research

Another problem with empirically second-guessing consumers' valuations of fuel economy is the crudeness of most modeling techniques. The estimated valuations vary by an order of magnitude, suggesting that the econometricians do not understand this issue very well. In practice, there are no 'controlled experiments' where consumers are offered the choice between two otherwise identical vehicles, where one is more expensive yet has better fuel economy. On the contrary, in the real world there are tradeoffs between vehicles that simultaneously differ on vehicle size, acceleration, price, safety, and finally fuel economy. More recent modeling has done a better job capturing these nuances, but economists have still not reached a consensus on exactly what motivates consumers when making vehicle purchases. [OAR-2009-0472-7225.1, p.13]

Another problem with the entire approach is to assume that consumers have identical tastes regarding fuel economy. In reality, some consumers may be very concerned, while others may not be. Thus even if the proposed rule made the "representative consumer" better off, in practice it would still harm those consumers who (for whatever reason) do not place a high subjective value on fuel economy. [OAR-2009-0472-7225.1, p.14]

International Council on Clean Transportation

EPA asked for comments "on the usefulness of consumer choice modeling results and the consistency and reliability of results from these models." The usefulness of consumer choice models depends on establishing an appropriate consumer discount rate for the fuel savings. As discussed, above, there are numerous unresolved questions related to consumer welfare that reflect the lack of clarity and understanding of this issue in general. There is no point in trying to use a consumer choice model until the issue of consumer welfare is resolved and an appropriate discount rate established. [OAR-2009-0472-7156.1, pp.4-5]

Natural Resources Defense Council

Consumer Vehicle Choice Models Are Not Appropriate for Welfare Analysis
EPA and NHTSA have solicited feedback on the future use of consumer vehicle choice models to estimate welfare impacts associated with new standards. We believe such models have a role in estimating the outcome of particular market-based policies (e.g., feebates, consumer incentives) or the market driven penetration rates of new technologies. However, such models are not useful when evaluating the consumer welfare impacts of new GHG or CAFE standards. [OAR-2009-0472-7141.1, p. 25]

The basic framework of the model, consumer utility maximization, suffers from the identical weaknesses of using a "revealed" or "implicit" discount rate to quantify the benefits of fuels savings. That is, the coefficients for the consumer vehicle choice models

must be estimated using existing market data (i.e., "revealed preferences") or data from surveys (i.e., "stated preferences"). The models simply assume, without any empirical foundation, that the consumers are already maximizing their utility with their current decisions. Thus, the use of such models to estimate consumer welfare impacts leads to a circular conclusion that any changes in vehicle attributes (including fuel efficiency) decrease consumer welfare. Clearly, given the robust discussions in the NPRM and in the energy efficiency literature and the accepted use of low discount rate for appliance efficiency standards, there is strong basis for the conclusion that market intervention in the form of efficiency standards can lead to significant increases in consumer welfare by overcoming market barriers to efficiency. [OAR-2009-0472-7141.1, p. 25]

Furthermore, we concur with the EPA discussion of the limitations of such models since they must be estimated using existing vehicles choices which clearly do not represent a full set of choices the consumer could face for fuel efficiency, especially in the future market place with new technologies. The new standards have the potential to bring significant changes to the vehicle market with improvements in fuel economies that have not been seen for 20 years. Additionally, safety features continue to improve. Advanced electric-drive vehicles that bear little resemblance to their conventional gasoline counterparts are also poised to enter the market in significant numbers. The changes in vehicle choices available by the new configuration of the vehicle market cannot be reliably predicted by consumer choice models. [OAR-2009-0472-7141.1, p. 26]

Finally, the consumer vehicle choice models assume fixed consumer preferences and do not consider the reality of today's marketplace which clearly has demonstrated large shifts in consumer preferences away from large, fuel inefficient vehicles. The oil shock of 1973 serves as a historical reference for past large vehicle market changes. As EPA notes, consumer choice modeling efforts to predict shifts in the vehicle market were ineffective. Similarly the oil price shocks of 2007 and 2008 have also fundamentally reshaped consumer preferences for vehicles. Future changes in consumer attitudes towards global warming, energy security as well as oil prices will likely have an ongoing impact on reshaping consumer preferences, rendering any model which explicitly or implicitly depends on an assumption of fixed preferences obsolete. [OAR-2009-0472-7141.1, p. 27]

[Note that since the above comments apply to both EPA and NHTSA, they also appear under comment summary outline heading 4.5.5.2]

Union of Concerned Scientists

The agencies should continue including the private benefits when calculating the total benefits of the program and should not shift to a system that would include consumer choice models in the benefits assessments. It was those same consumer choice models that led many companies to dismiss hybrid-electric vehicles like the Prius, airbags, and many other innovations that have seen significant market success. [OAR-2009-0472-7181.1, p.16]

James Adcock

In general consumers with differing projections of the "true" future cost of SCC and fuel prices will make differing estimates of the utility of the purchase of a particular vehicle. Analysis that assumes one particular "US-wide" value of SCC or fuel costs will thus reach erroneous conclusions about vehicles Mfgs should be offering consumers – consumers hold a wide variety of beliefs on these subjects and thus Mfgs should, if "free market" forces are at work [which they aren't, due to huge barriers to entry into the Auto Industry -- due in part to NHTSA regulations] provide a wide variety of fuel efficiency vehicles to consumers. But the market doesn't actually work that way. For example Toyotas' great success with the Prius makes it LESS likely not more that other Mfgs will attempt to compete in that segment of the market.

We support the EPA contract with RFF to develop a better model and understanding of the vehicle market.

New York University School of Law, Institute for Policy Integrity (IPI)

Consumers can expect either increased vehicle purchase prices or different vehicle design features (or some combination thereof). In the former case, consumers could experience lost welfare if the fuel savings and other private benefits from greater fuel efficiency do not fully compensate them for the increased purchase price. In the latter case, consumers could experience lost welfare if they do not value the new fuel efficiency as highly as they value the design features that have been sacrificed. Three economic concepts will affect the measurement of consumer valuations: the Energy Efficiency Paradox, the Positional Goods Effect, and the Bandwagon Effect. [OAR-2009-0472-7232.3, p. 5]

EPA Response:

Consumer vehicle choice models estimate what vehicles consumers buy based on vehicle and consumer characteristics. In principle, they could provide a means of understanding both the role of fuel economy in consumers' purchase decisions and the effects of this rule on the benefits that consumers will get from vehicles. The NPRM included a discussion of the wide variation in the structure and results of these models. Models or model results have not frequently been systematically compared to each other. When they have, the results show large variation over, for instance, the value that consumers place on additional fuel economy. As a result, EPA found that further assessment needed to be done before adopting a consumer vehicle choice model. In the NPRM, EPA asked for comment on the state of the art of consumer vehicle choice modeling and whether it is sufficiently developed for use in regulatory analysis.

EPA has not used a consumer vehicle choice model for the final rule analysis, due to concerns discussed in Chapter 8.1.2 of the RIA, and because no new information became available, during the public comment period or afterward, to resolve those concerns. In fact, a recent review commissioned by EPA supports the finding of great variability, by looking at one key parameter: the role of fuel economy in consumers' vehicle purchase

decisions.[2] It finds no consensus on the role of fuel economy in consumer purchase decisions. Of 27 studies, approximately equal numbers find that consumers undervalue, overvalue, or value approximately correctly the fuel savings that they will receive from improved fuel economy. The variation in the value of fuel economy in these studies is so high that it appears to be inappropriate to identify one central estimate from the literature. Thus, estimating consumer response to higher vehicle fuel economy is still unsettled science. It is likely that this variation exists as well in measuring consumer response to changes in other vehicle characteristics, such as performance. Thus, there does not appear to be evidence at this time to develop robust estimates of consumer welfare effects of changes in vehicle attributes.[3]

Nonetheless, because there are potential advantages to using consumer vehicle choice models if these difficulties can be addressed, EPA is continuing to explore options for including consumer and producer choice in modeling the impacts of fuel economy-related regulations. This effort includes further review of existing consumer vehicle choice models and the estimates of consumers' willingness to pay for increased fuel economy. We are exploring (and will continue to explore) the implications of behavioral economics for this modeling. In addition, EPA is developing capacity to examine the factors that may affect the results of consumer vehicle choice models, and to explore their impact on analysis of regulatory scenarios. Under contract with EPA, Resources for the Future (RFF) is developing a model of the vehicle market that can be used to evaluate different policy designs and compare regulatory scenarios on the basis of changes in cost, changes in the prices paid by consumers, changes in consumer welfare, and changes in industry profits. It should help to shed light on whether it is more costly to rely solely on the application of technologies to vehicles to meet a given fuel standard than when consumer and producer behavior is taken into account. EPA plans to evaluate this work within the context of the overall literature on consumer vehicle choices, to determine its usefulness in informing the analysis for future rules. EPA agrees with the California Air Resources Board that stated preference information may be useful for evaluating new technologies not currently in the marketplace.

Economic theory provides insight into how to consider consumer welfare implications in the absence of the use of consumer vehicle choice models. As discussed in Section III.D of this preamble, the technology cost estimates developed here take into account the costs to hold other vehicle attributes, such as size and performance, constant. Thus, if auto makers decide to change these characteristics, they are likely to do so only if consumers are likely to prefer these changes to the increased vehicle costs. In addition, the analysis assumes that the full technology costs are passed along to consumers. With these assumptions, because welfare losses are monetary estimates of how much consumers would have to be compensated to be made as well off as in the absence of the change,[4]

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[2] Greene, David L. "How Consumers Value Fuel Economy: A Literature Review." EPA Report EPA-420-R-10-008, March 2010.

[3] As noted in the previous response, the decision not to use these uncertain valuation methodologies is both reasonable and was not determinative in the ultimate decision as to what standard to adopt.

[4] This approach describes the economic concept of compensating variation, a payment of money after a change that would make a consumer as well off after the change as before it. A related concept, equivalent

the price increase measures the loss to the consumer.[5] Assuming that the full technology cost gets passed along to the consumer as an increase in price, the technology cost thus measures the welfare loss to the consumer. Increasing fuel economy would have to lead to other changes in the vehicles that consumers find undesirable for there to be additional losses not included in the technology costs. At this time EPA has no available methods to identify or estimate potential additional effects on consumers not included in the technology cost estimates, e.g., due to changes in vehicles that consumers find undesirable, shifts in consumer demand for other attributes, and uncertainties about the long term reliability of new technologies. Comments on the rule generally supported EPA's analysis of the technology costs and the assumption that other vehicle characteristics were not adversely affected, and EPA adheres to that analysis in adopting the final rule.

EPA's assessment is that vehicle sales may increase as a result of this rule (see Preamble III.H.5 and RIA 8.1.1), because the fuel savings exceed technology costs even when only a five-year payback period for those savings is considered.

EPA considers the energy efficiency paradox, the positional goods effect, and the bandwagon effect as some of the potential explanations for why consumers do not buy the cost-effective amount of fuel economy and discusses those in Preamble III.H.1 and RIA 8.1.2, along with Section 5.13.1 of this Response to Comments document. EPA continues to explore the implications of these and other hypotheses (such as those cited by the Consumer Federation of America's comments) for consumer vehicle choice modeling and welfare analysis.

4.5.2 The on-road fuel economy "gap"

No comments were received on either the derivation or use of the on-road fuel economy gap.

4.5.3 Fuel prices and the value of saving fuel

No comments were received on the data sources used for fuel prices.

4.5.4. Benefits of Reducing GHG Emissions (Social Cost of Carbon)

variation, estimates the income change that would be an alternative to the change taking place. The difference between them is whether the consumer's point of reference is her welfare before the change (compensating variation) or after the change (equivalent variation). In practice, these two measures are typically very close together.

[5] Indeed, it is likely to be an overestimate of the loss to the consumer, because the consumer has choices other than buying the same vehicle with a higher price; she could choose a different vehicle, or decide not to buy a new vehicle. The consumer would choose one of those options only if the alternative involves less loss than paying the higher price. Thus, the increase in price that the consumer faces would be the upper bound of loss of consumer welfare, unless there are other changes to the vehicle due to the fuel economy improvements that make the vehicle less desirable to consumers.

EPA RESPONSE A

Organizations: See table below.

Commenter Affiliation	Document ID Number
California Air Resources Board	EPA-HQ-OAR-2009-0472-7189.1
Center for Biological Diversity	EPA-HQ-OAR-2009-0472-7265.1
Connecticut DEP	EPA-HQ-OAR-2009-0472-7301.1
Environmental Defense Fund	EPA-HQ-OAR-2009-0472-7246.1
Ford Motor Company	EPA-HQ-OAR-2009-0472-7082.1
Institute for Energy Research	EPA-HQ-OAR-2009-0472-7225.1
Institute for Policy Integrity at New York University School of Law	EPA-HQ-OAR-2009-0472-7246.1
National Association of Clean Air Agencies	EPA-HQ-OAR-2009-0472-7071.1
Natural Resources Defense Council	EPA-HQ-OAR-2009-0472-7274.1
National Rural Electric Cooperative Association	EPA-HQ-OAR-2009-0472-7252.1
New Jersey DEP	EPA-HQ-OAR-2009-0472-7093.1
Northeast States for Coordinated Air Use Management	EPA-HQ-OAR-2009-0472-7235.1
Pew Center	EPA-HQ-OAR-2009-0472-7239.1
Physicians for Social Responsibility, Los Angeles	EPA-HQ-OAR-2009-0472-7283, pg 81
Private Citizen (Adcock, James)	EPA-HQ-OAR-2009-0472-5385
Private Citizen (Chew, Yuli)	EPA-HQ-OAR-2009-0472-7042.1
Private Citizen (Magavern, Bill)	EPA-HQ-OAR-2009-0472-7283, pg 179-186
Private Citizen (Rose, Stephen)	EPA-HQ-OAR-2009-0472-7276.1
Private Citizen (Steiner, John)	EPA-HQ-OAR-2009-0472-8705
Sierra Club	EPA-HQ-OAR-2009-0472-6185, p. 31
Stockholm Environment Institute-US Center	EPA-HQ-OAR-2009-0472-7432.1
Union of Concerned Scientists	EPA-HQ-OAR-2009-0472-7181.1
University of California Santa Barbara Bren Working Group	EPA-HQ-OAR-2009-0472-7188.1

Comments:

Commenters presented extensive methodological input and discussed various issues, including discount rate, uncertainty and risk, and magnitude and uses of the social cost of carbon.

Comments on Discount Rate

These comments identified concerns about the discount rates applied to SCC estimates and provided different recommendations about issues such as the approach used to select discount rates, the magnitude of the discount rate, and ways to account for uncertainty in discount rates. Many commenters emphasized the ethical issues embedded in the selection (e.g., 7246.1, 7239.1, and 7274.1).

In general, commenters recommended different approaches and lower rates to give more weight to climate damages experienced by future generations. Some commenters recommended that EPA develop a social discount rate on the basis of detailed consideration of the scientific, ethical, and economic implications of discounting (e.g., 7246.1 and 7274.1); several commented on using the Ramsey framework in particular to derive the discount rate (e.g., 7432.1, 7246.1, 7274.1). Some commenters did not think it was appropriate to infer rates from observed market behavior when considering the long time horizons for climate damages (e.g., 7265.1, 7246.1, 7274.1). For example, the Environmental Defense Fund and the NYU Institute for Policy Integrity stated in a joint letter that a "simple application of a market rate of return is not justified" because of the "special relationship of GHGs to the market rate of return and to a large range of goods and services (both market and non-market)" (7246.1, pg 15). They noted, however, that if EPA opted to use market rates of return, it should also analyze and consider the underlying complexities in greater detail, such as the relationship between GHG reductions and economic growth, and present a robust discussion about GHG reductions "fit into an optimal portfolio of investments" (7246.1, pg 15).

In addition, two commenters suggested that EPA should not discount the SCC (7265.1, 7274.1). That is, they stated that EPA should use a discount rate of zero, thereby making the present value of damages in the future equivalent to their value in the future, effectively making the net present value of damages infinite.

Many of the commenters stated that the discount rates applied to the interim SCC estimates were too high and therefore resulted in underestimates of SCC that fail to adequately capture the value of damages experienced by future generations (e.g., 7265.1, 7246.1, 7274.1, 7239.1). In particular, some commenters disagreed with the rationale given for use of a 5 percent discount rate. Dr. Rose stated that "a 5 percent discount rate is inconsistent with risk-free consumption trade-offs within the current generation," further noting that the intergenerational timeline for GHG emissions "implies even greater uncertainty than that reflected in intragenerational interest rates" (7276.1, pg 4). That is, GHG mitigation represents a different kind of investment than intragenerational investments analyzed with higher discount rates like 5 percent. The Environmental Defense Fund and the NYU Institute for Policy Integrity concluded that there are "strong reasons for concluding that a substantial fraction of the benefits from abatement are uncorrelated or even negatively correlated with the returns to the economy as a whole" (7246.1, pg 15). Other commenters agreed with this view and concluded that it would be appropriate to view investment in GHG mitigation from a risk-averse perspective—i.e.,

investment in mitigation as a form of insurance against uncertain future climate damages—rather than a risky investment in mitigation technology (7274.1, 7432.1).

Furthermore, some commenters disagreed with the proposed rule's statement that 5 percent is consistent with the Ramsey framework, based on standard estimates of the Ramsey parameters (e.g., 7239.1, 7276.1, 7246.1, 7432.1). First, the Stockholm Environment Institute noted that controversy about appropriate estimates of Ramsey parameters has thus far prevented standardization of the framework values. Similarly, Environmental Defense Fund and NYU Institute for Policy Integrity stated that "[t]he claim that 5% is 'near the middle of the range of values that are *able to be derived* from the Ramsey equation' is in fact meaningless—there is no theoretical lower or upper bound to values that could possibly be derived from the Ramsey equation" (7276.1, pg 8). Second, several commenters pointed out that the Ramsey framework normally assumes perfect certainty about the future and needs to be adjusted to account for the significant uncertainty inherent in GHG emissions; this would result in a lower estimate of the discount rate (e.g., 7432.1, 7239.1). Third, the Stockholm Environment Institute concluded that the derivation of the 5 percent discount rate from Ramsey "does not appear to be based on a careful reading of the sources cited in supporting footnotes" (7432.1, pg 11).[6]

In addition, many commenters noted that the range of discount rates used in the proposed rule did not include low enough rates and recommended using lower rates in the final rule (e.g., 7239.1, 7432.1, 7188.1). Several specifically suggested using 2 percent and lower and one recommended setting an upper bound that did not exceed 4 percent (7246.1, 7274.1).

The commenters presented multiple sources to support their recommendation for lower rates. For example, several commenters stated that consideration of rates below 3 percent would fulfill OMB Circular A-4 guidance to conduct sensitivity analysis at such rates for intergenerational problems (e.g., 7432.1, 7274.1, and 7239.1). The Environmental Defense Fund and NYU Institute for Policy Integrity presented evidence of lower rates that the interagency group should consider, including a 2009 National Academy of Science study that reporting discount rates of 1.5, 3, and 4.5 percent for SCC estimates (7246.1).

Finally, some commenters recommended that EPA account for discount rate uncertainty and adjust the rates in the final rule (e.g., 7246.1, 7274.1, 7432.1). The Stockholm Environment Institute disagreed with the proposed rule's statement that the literature on techniques to account for discount rate uncertainty, in particular time-varying discount rates, is relatively recent. This commenter cited several papers, including a literature review published in 2002 in AEA's Journal of Economic Literature; the review discussed

[6] The Stockholm Environment Institute determined that four of the five sources cited in the proposal as the basis for the Ramsey parameter estimates are inconsistent with the numerical estimates presented in proposed rulemaking. See OAR-2009-0472-7432.1, pg 11.

numerous arguments for time-varying discount rates dating back to a 1937 paper.[7] Likewise, the Environmental Defense Fund and the NYU Institute for Policy Integrity pointed out the qualitative conclusions of the work by Newell and Pizer are "reinforced in a general theoretical setting by Gollier and Weitzman" (7246.1, pg 21).[8]

Likewise, the Environmental Defense Fund and NYU Institute for Policy Integrity supported the adjustment of discount rates for uncertainty and recommended that EPA do so to determine the principal SCC estimates, rather than limit it to sensitivity analysis. These commenters described the choice between the Weitzman and Newell-Pizer approaches, which define discount rate uncertainty in different ways, as a false one because each approach supports the same conclusion: "in the presence of uncertainty over the appropriate discount rate, future costs and benefits should be discounted at a rate that declines over time" (7246.1, pg 21). However, they noted that if forced to choose one or the other, they would advise Newell and Pizer because of "its careful use of historical data, its demonstration that time-varying discount rates are rigorously justified on strictly descriptive grounds, and its development of a rigorous analytical methodology that can be readily applied to the computation of SCC values in the current context" (7246.1, pg 20-21).

Another commenter identified the potential time inconsistency as an issue to consider when applying Newell and Pizer (2003) to SCC estimates. Specifically, Dr. Rose stated that the Newell and Pizer discounting framework may present values that are inconsistent with various alternative futures; he further noted that such inconsistencies would likely be greater if climate impacts affect future economic growth (7276.1).

The Environmental Defense Fund and NYU Institute for Policy Integrity addressed the critique that rank ordering of present value and future value of benefits may produce different results when using time-differential discount rates. They maintained that the timing of the investment decision is not arbitrary—it is made by individuals in the present under known certainties. Rather, concerns about time inconsistency center on "a *certain* pattern of discount rates ("high today, low tomorrow") that the planner nonetheless *systematically fails to anticipate,*" but that time-declining rates (e.g., Newell-Pizer) involve a "discrete investment decision [that] must be made today, in the absence of full information about the future discount rate, that will continue to yield returns far into the future" (7246.1, pg 21-22). In sum, they concluded that no time inconsistency arises in the latter case because "by the time we reach the future the decision will have already been made. Declining discount rates merely provide an aid to current decision-making in the face of risk" (7246.1, pg 21-22).

Comments on Uncertainty and Risk

[7] Shane Frederick, George Loewenstein, and Ted O'Donoghue, "Time discounting and time preference: A critical review," Journal of Economic Literature (2002) 40:351-401.

[8] See, for example, Martin L. Weitzman, Why the Far Distant Future Should Be Discounted at Its Lowest Possible Rate, 36 Journal of Environmental Economics and Management, 201 (1998); Christian Gollier & Martin L. Weitzman, How Should the Distant Future Be Discounted When Discount Rates Are Uncertain? (Working Paper, Nov. 2009), http://www.economics.harvard.edu/faculty/weitzman/files/discountinglongterm(2).pdf.

Many commenters discussed the limitations of the SCC estimates, in particular the treatment of uncertainty, catastrophic impacts, and omitted impacts, and the implications for the benefits assessment. For example, several commenters noted that the reliance on model-weighted averages in the proposed rule failed to capture the uncertainty in climate impacts. The Environmental Defense Fund and NYU Institute for Policy Integrity recommended the final rule better account for the upward skew of uncertainty by, for example, applying an upward adjustment to the SCC estimates.

Commenters from various environmental organizations and state and regional government agencies observed that the models do not capture numerous and significant climate impacts, in particular potentially catastrophic events, which contributes to the underestimation of GHG mitigation benefits. The Union of Concerned Scientists' conclusion that the interim SCC estimates fell "far short of capturing the potentially immense impacts of climate change" was echoed by many other commenters (e.g., 7265.1, 7235.1, and 7274.1).

The Natural Resources Defense Council (NRDC) elaborated on the treatment of catastrophic impacts, stating that the "SCC estimates [used in the proposed rule] are systematically biased downward, in large part because they do not adequately reflect the most critical issue in climate change: non-zero probabilities of extremely high and potentially catastrophic damages" (7274.1, p. 3). NRDC observed that the set of interim SCC estimates misrepresented the probability distribution of climate damage estimates, which includes "a 'fat' right tail (low to medium probabilities of relatively high damages), extending toward infinity (very low probabilities of profound catastrophes)" (7274.1, pg 12). Specifically, NRDC noted that while the lower bound of the interim SCC estimates was representative of the left tail of the distribution of damage estimates, the upper bound was not. NRDC recommended that SCC estimates instead go to the right of the central estimates to better represent the right-skew of the distribution. NRDC further supports this recommendation by referring to Weitzman's (2009) observation that "climate change presents a long chain of tenuous inferences with huge uncertainties in every link that undermine the capability of [integrated assessment models] to estimate damages" (7274.1, pg 14).

Comments on Magnitude and Uses of Social Cost of Carbon

Many commenters stated that the interim SCC estimates were too low (e.g., 7301.1, 7181.1, 7093.1, 7239.1), although one commenter said SCC overstates the benefits of GHG mitigation (7225.1). Some commenters expressed concern that EPA is using an underestimate of the SCC to determine the stringency of the vehicle rule's GHG standards (e.g., 7239.1, 7265.1, 7093.1). Commenters recommended that EPA consider higher values in the analysis to better represent the possibility of catastrophic climate damages; some recommended specific numbers to use as the upper bound (e.g., 7189.1) or other analyses to set a minimum lower bound (7181.1).

Commenters discussed additional uses of SCC in rulemaking analyses as well as presentation. For example, the Environmental Defense Fund and NYU Institute for Policy Integrity recommended that the interagency group specify how agencies should use SCC in traditional regulatory impact analysis and agency rulemaking. The Stockholm Environment Institute also commented on the use and purpose of SCC, and noted that policies designed from an insurance perspective "would not be framed in terms of cost-benefit calculations," but that economic analysis would inform selection of a least-cost strategy for meeting a risk-based standard (7432.1, pg 13).

Other recommendations regarding the use and presentation of SCC included:

- Present an even number of SCC estimates (7276.1)
- Expand the presentation of information about the basis for the estimates, including discussion about omitted impacts, a broader set of descriptive statistics, and probability density functions (e.g., 7274.1, 7246.1)
- Considering using CO_2 mitigation cost in lieu of SCC estimates (7082.1)
- Incorporate a broader range of SCC estimates into the benefits analysis rather than rely on central estimates (e.g., 7246.1).

EPA Response A:

As discussed in preamble III.H.6, EPA and NHTSA used new SCC estimates in this final rule that were recently developed by an interagency process, in which both agencies participated. EPA and NHTSA critically evaluated the decisions of the interagency group and the new SCC estimates and endorsed them as reasonable for this final rule for the reasons presented in preamble III.H.6. The remainder of this response discusses EPA's consideration of and response to the comments on discount rate, uncertainty and risk, and magnitude and uses of the social cost of carbon, and, as relevant, how the interagency modeling exercise addressed the methodological comments.

EPA has responded to the commenters' other SCC comments elsewhere. Specifically, refer to Response [B] for EPA's response to comments regarding the interim SCC estimates and methodology, the use of integrated assessment models, and equity-weighting, and to Response [C] for EPA's response to comments regarding global and domestic valuations of SCC.

Discount rate

Many of the comments on SCC identified concerns about the discount rates applied to the interim SCC estimates and provided different recommendations about: (i) approach used to select discount rates; (ii) the magnitude of the discount rate, and; (iii) ways to account for uncertainty in discount rates.

EPA's continued assessment of the SCC literature and review of the extensive public comments about discount rate selection reaffirms the complexity and sensitivity of this task. Recognizing the lack of consensus about an appropriate discount rate to use in this

context and uncertainty regarding how interest rates might change over time, EPA selected three rates to span a plausible range of certainty-equivalent constant discount rates: 2.5, 3, and 5 percent per year. Although EPA selected discount rates for this exercise that differed from some of those recommended by commenters, the agency regards its approach as defensible and transparent given its consistency with current benefit-cost analysis principles as well as OMB's guidelines for such analysis as embodied in OMB Circular A-4. The Technical Support Document, *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (hereafter, "SCC TSD"), discusses in detail the basis for the discount rate selection.[9]

(i) Response to Comments on the Approach Used to Select Discount Rates

EPA considered the comments and recommendations regarding both prescriptive approaches for discount rate selection and descriptive approaches that infer discount rates from observed market behavior. As stated in the SCC TSD, the selection of discount rates drew on both approaches but relied primarily on the descriptive approach.

In sum, average returns on longer-term investments were used to inform selection of certainty-equivalent discount rates. This approach was consistent with the comments on consumption-based rates as well as the literature. EPA recognizes its limitations but finds this approach to be the most defensible and transparent given its consistency with the standard contemporary theoretical foundations of benefit-cost analysis and with the approach outlined in OMB's existing guidance. See the SCC TSD for a detailed explanation.

Prescriptive Approaches. EPA considered all recommendations for prescriptive approaches, including selection of rates at 2 percent and lower within the Ramsey framework and use of a zero discount rate (i.e., not discounting). As noted in the SCC TSD, Ramsey (1928) argued that it is "ethically indefensible" to apply a positive pure rate of time preference to discount values across generations. After considering the comments and relevant literature, however, EPA ultimately decided that within the time constraints of this rulemaking, use of observed market behavior was a more transparent and defensible approach consistent with the federal government's current guidelines on intergenerational discounting. See the SCC TSD for the detailed rationale and discussion.

NRDC presented an interesting observation regarding the relationship between damage functions and growth rates, and maintained that declining economic growth requires a negative discount rate. However, negative growth does not automatically imply negative discount rates because the discount rate is a function of both rho and the product of eta

[9] Interagency Working Group on Social Cost of Carbon, U.S. Government, with participation by Council of Economic Advisers, Council on Environmental Quality, Department of Agriculture, Department of Commerce, Department of Energy, Department of Transportation, Environmental Protection Agency, National Economic Council, Office of Energy and Climate Change, Office of Management and Budget, Office of Science and Technology Policy, and Department of Treasury, "*Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*," February 2010. EPA-HQ-OAR-2009-0472

and growth. Therefore, one could have low, but positive discounting depending on the value of rho.

Regardless of the relationship between economic growth and discount rate, the modeling exercise supporting the final rule could not allow for negative discount rates because it used constant discount rates. Moreover, negative discount rates cannot be justified using EPA's current discounting approach—reliance on observed market behavior to infer discount rate. Application of a negative discount rate would involve explicit consideration of ethical aspects of intergenerational discounting and ultimately the selection of an appropriate social discount rate.

EPA agrees with the NYU Institute for Policy Integrity and the Environmental Defense Fund (IPI, EDF) that use of prescriptive approaches would necessitate explicit consideration of philosophical and legal issues (7246.1, pg 4). While EPA has considered these comments and remains keenly aware of the normative dimensions of discount rate selection, the selection of discount rates in the recent modeling exercise focused primarily on economic considerations and the guidelines for intergenerational discounting specified in OMB Circular A-4 and EPA's guidance.

Using Market Rates to Inform Discount Rates. Several commenters expressed a preference for explicitly prescriptive approaches but also provided comments for the agency to consider if it used market rates to inform discount rate selection (e.g., see IPI, EDF, NRDC). EPA agrees with IPI and EDF's clarification that regardless of the approach, the choice of a discount rate is not a "value-free 'objective' decision" and involves "deep ethical and moral judgments" (7246.1, pg. 4). While using observed market behavior was the best approach feasible for this analysis, EPA recognizes its limitations and will continue to seek opportunities, such as convening workshops to explore economic and non-economic aspects of discounting, to aid our understanding of the relevant issues. The SCC TSD explains in greater detail the rationale for using market rates to inform discount rate selection.

EPA concurs with the comments regarding the need to carefully select an appropriate market rate, given the numerous rates available, as well as the comments on consumption-based discount rates. EPA carefully reviewed the literature and considered various complexities involved in discounting over long time horizons. For example, IPI and EDF noted that it would be difficult to justify the selection of high rates on the basis that the returns from alternate investments would be available as compensation for those impacted by climate change because this is unlikely to be feasible over long time horizons. As discussed in the SCC TSD, EPA opted to use average returns on longer-term investments rather than short term rates.

In addition, IPI and EDF stated that if EPA uses market rate of returns, it should also analyze and consider the underlying complexities in greater detail, such as the relationship between GHG reductions and economic growth. In particular, IPI and EDF referred to Weitzman's observations about a limitation of integrated assessment models: the models' assumption of perfect correlation between GHG damage and aggregate

economic activity is a function of the model design, not "the result of any reasoned argument" (Weitzman 2007) (as quoted in 7246.1, pg 15). Indeed, the modeling exercise has raised questions about the relationship between mitigation benefits and economic growth in the models. While more analysis is required before EPA can reach definitive conclusions, the agency recognizes this as a key issue that should be explored when refining SCC or applying it to benefit analyses.

(ii) Magnitude of Discount Rate

EPA determined lower rates are appropriate and used rates of 2.5 and 3 percent. Consistent with the rationale presented by several commenters, risk-free rates of return informed the selection of discount rates. However, average returns on longer-term investments rather than short-term rates were used. The lower rates are also consistent with the comments suggesting that mitigation should be viewed as a form of insurance against climate damages rather than a rate of return on risky assets (e.g., NRDC, Stockholm Environment Institute).

Many commenters disagreed with the rationale for and use of a 5 percent discount rate in the proposed rule. In particular, several commenters stated that GHG mitigation represents a different kind of investment than intragenerational investments analyzed with higher discount rates like 5 percent. IPI and EDF concluded that there are "strong reasons for concluding that a substantial fraction of the benefits from abatement are uncorrelated or even negatively correlated with the returns to the economy as a whole." Other commenters agreed with this view and concluded that it would be appropriate to view investment in GHG mitigation from a risk-averse perspective—i.e., investment in mitigation as a form of insurance against uncertain future climate damages—rather than a risky investment in mitigation technology. Consideration of SCC estimates based on a 5 percent discount rate could not be ruled out, however, and was included to represent the view that climate damages are highly correlated with market returns, under which the appropriate discount rate would be expected to exceed the risk-free rate.

In addition, IPI and EDF recommended 4 percent as an appropriate upper bound. While EPA agrees with IPI and EDF that "the uncertainty (more properly the risk) over the temperature changes resulting from a ton of GHG emissions does not justify a higher discount rate," it is not clear how this concern argues for setting 4 rather than 5 percent as the upper bound (7246.1, pg 24).

In sum, EPA applied three constant certainty-equivalent discount rates (2.5, 3, and 5 percent) to the SCC estimates to account for various perspectives about risk and uncertainty. The upper value of 5 percent accounts for the view that there may be a high correlation between climate damages and market returns while the rest of the SCC analysis centers on a discount rate consistent with concerns about risk aversion. See SCC TSD for more details about the rationale for using 5 percent.

(iii) Uncertainty in discount rates

The comments informed the ongoing consideration of how GHG benefits analysis could account for discount rate uncertainty through differential discounting. The SCC TSD presents the basis for EPA's decision to account for discount rate uncertainty by using certainty-equivalent constant discount rates, in particular inclusion of 2.5 percent to incorporate the concern that interest rates are highly uncertain over time.

The SCC TSD also summarizes the consideration of the approaches discussed by commenters (e.g., Newell and Pizer (2003), Weitzman (2001), and the UK's "Green Book" for regulatory analysis) and concludes that the proper way to model discount rate uncertainty remains an active area of research.

In particular, key questions about potential time inconsistencies arising with differential discounting remain unresolved. For example, in its 2008 critique of the EPA Economic Guidelines, the EPA Science Advisory Board (SAB) found that in cases with uncertain discount rates, "rank ordering of policies by present values and future value may differ." The SAB advised EPA to use caution when interpreting the results of time differential discounting and noted that more research is warranted. Similarly, Dr. Rose noted that there is an inconsistency between the Newell and Pizer (2003) discounting and various alternative futures.

Several commenters considered the potential for and implications of time inconsistency issues. For example, the Stockholm Environment Institute stated that "there is minimal risk" of time inconsistency problems and that regardless, "no one…has the life span or resources to arbitrage against multi-century public policies" (7432.1, pg 12). IPI and EDF noted that the timing of the investment decision is not arbitrary—it is made by individuals in the present under known certainties. They maintain that concerns about time inconsistency center on "a *certain* pattern of discount rates ('high today, low tomorrow') that the planner nonetheless *systematically fails to anticipate,*" but that time-declining rates (e.g., Newell-Pizer) involve a "discrete investment decision [that] must be made today, in the absence of full information about the future discount rate, that will continue to yield returns far into the future" (7246.1, pg 22). IPI and EDF conclude that no time inconsistency arises in the latter case because "by the time we reach the future the decision will have already been made. Declining discount rates merely provide an aid to current decision-making in the face of risk" (7246.1, pg 22). Although the commenters presented a valid point, in light of uncertainty about how interest rates may change over time, EPA uses a low certainty-equivalent discount rate to incorporate the concern that interest rates are highly uncertain over time.

IPI and EDF also point out that the "choice of starting point cannot be made independently of the underlying financial instrument used to estimate real returns over time. The simulated paths are extensions of a particular time series, and thus correspond to a particular financial instrument" (7246.1, pg 23). They state that the time-differential discounting literature, which has thus far relied on lower discount rates as the starting point, provides sufficient empirical evidence for EPA to use a similar starting point. IPI and EDF suggest that the agency would first need to gather empirical evidence before using alternative starting points, in light of the likely differences that would result from

instruments with different risk levels. However, given the lack of agreement about the starting point and proper adjustment to use in differential discounting, EPA could not justify relying on this technique.

EPA agrees with a comment from Dr. Rose that clarifies the difference between *dynamic* discount rates and *uncertain* rates. The SCC modeling exercise supporting the benefits analysis in this rulemaking used certainty-equivalent constant discount rates and did not change over time. The SCC TSD discusses in greater detail how the discount rates accounted for uncertainty.

Uncertainty and Treatment of Impacts in the Models

Many commenters discussed the limitations of the SCC estimates, in particular the treatment of uncertainty, catastrophic impacts, and omitted impacts, as well as the implications for the benefits assessment. EPA has responded to these concerns by providing a more robust discussion about these important issues that complements the SCC estimates and better informs policy makers.

EPA considered these limitations and, as a participant in the interagency group, used best available information and techniques to quantify such impacts as feasible and supplement the SCC with qualitative assessments. Overall, presentation of the revised SCC estimates in the final rule responds more fully the uncertainties and risks associated with climate change (see the SCC TSD for discussion).

In particular, the revised estimates more fully capture uncertainty through Monte Carlo analysis and are accompanied by a fuller discussion of the uncertainties and risks associated with climate change, as well as the limitations of SCC. In addition to the uncertain parameters in each model, EPA assessed three parameters—climate sensitivity, socioeconomic and emissions trajectories, and discount rate—and sought to model them probabilistically for purposes of formal uncertainty analysis in the interagency modeling exercise. A probability distribution was specified for climate sensitivity and used as an input in the three models. A probability distribution was not specified for the other two parameters because of uncertainty about how to model them probabilistically for purposes of formal uncertainty analysis. For example, while models can project potential emissions pathways, assigning probability weights to different states of the world in an analytically rigorous way proved challenging given the dearth of information on the likelihood of a full range of future socio-economic pathways. Therefore, the modeling exercise used multiple scenarios that span a range of socio-economic parameters and multiple values for the discount rate.

Consistent with the commenter's recommendations, EPA has provided much more information about the SCC estimates and the underlying parameters in the record to the final rule. For example, the SCC TSD shows how SCC values for 2010 vary across model, scenario, and discount rate; it also presents the distribution of SCC estimates, including benefit estimates at the 95th and 99th percentiles. However, EPA believes that it is more appropriate to place the technical information in the rulemaking's technical

supporting documents, rather than in the preamble text, which is intended to provide a high-level discussion of the policy issues related to the economic analysis. Therefore, EPA has presented a summary of the SCC results in the preamble along with references to the other rulemaking documents that provide data and methodological details necessary to replicate the analysis.

EPA also considered the emerging literature about the treatment of risk of catastrophic impacts and commenters' recommendations on this issue. For example, EPA considered the findings from Weitzman (2009) suggesting that catastrophic damages are so large that they would dominate the effect of the discount rate in a present value calculation and result in an infinite willingness-to-pay for GHG mitigation today. However, EPA determined that this research requires further exploration before its generality is known and the optimal way to incorporate it into regulatory reviews is understood. EPA also considered ways to account for risk aversion in the SCC estimates, such as inclusion of a risk premium, suggested by IPI, EDF, and the Pew Center on Global Climate Change. The review showed that further research in this area is needed to develop a reasonable approach to account for catastrophic risks in regulatory analyses. In addition, an adder was not used given the lack of a rigorous method to select the number; choosing an adder value would at this point amount to an arbitrary decision. Finally, available information did not support rigorous inclusion of an option value, as recommended by the IPI and EDF. See the SCC TSD for more about the consideration of catastrophic risk.

Instead, low probability, high impact events are incorporated into the SCC values through explicit consideration of their effects in two of the three models as well as the use of a probability density function for equilibrium climate sensitivity (see the SCC TSD). Treating climate sensitivity probabilistically results in more high temperature outcomes than analyzing climate sensitivities of specific values (e.g., 1.5 or 4.5), which in turn lead to higher projections of damages. EPA has also presented a detailed qualitative assessment of potential catastrophic damages and the implications for SCC estimates in the SCC TSD. EPA remains interested in research about practical and robust methods to address this important consideration.

The SCC TSD further emphasizes the need to explore the sensitivity of the results to other aspects of the models, in particular how the damage functions incorporate adaptation, technological change, and catastrophic damages. While it is not possible at this time to provide a precise list of each model's treatment (i.e., included, excluded) of climate impacts, EPA has presented a robust discussion of this key analytical issue and placed more detailed model information in the docket.

In particular, the SCC TSD discusses in detail how each model estimates climate impacts, the known parameters and assumptions underlying those models, and the implications of incomplete treatment of impacts (catastrophic and non-catastrophic) for the SCC estimates. This discussion underscores the difficulty in accurately distilling the models' treatment of impacts in table-form. Most notably, the use of aggregate damage functions—which consolidate information about impacts from multiple studies—in two of the models poses a challenge in listing included impacts. For example, within the

broad agricultural impacts category, some of the sub-grouped impacts are not explicitly modeled but are highly correlated to other subcategories that are explicitly modeled. Therefore, it may be misleading to identify these kinds of impacts as either "included" or "omitted" from the model. Along those lines, impacts may be included in models but not directly; the Dynamic Integrated Climate and Economy (DICE) model represents adaptation implicitly through the choice of studies used to calibrate the aggregate damage function, and the Climate Framework for Uncertainty, Negotiation, and Distribution (FUND) model includes adaptation both implicitly and explicitly (see the SCC TSD for details).

Accordingly, EPA recognizes the need for a thorough review of damage functions—in particular, how the models incorporate adaptation, technological change, and catastrophic damages. EPA has considered the Pew Center on Global Climate Change's recommendation to conduct an expert elicitation on the value of omitted impacts, but determined that conducting a rigorous and complete expert elicitation was not possible within the rulemaking timeline. However, the Federal government is committed to exploring these models—e.g., determining which impacts are included and omitted—and how they can be modified to produce more accurate estimates of the SCC. EPA regards the SCC TSD as a starting point in the inquiry into the models' treatment of impacts and to motivate new research.

Regarding recommendations to modify model parameters that were not adjusted in this exercise, see Response B for EPA's response.

Magnitude and Uses of the Social Cost of Carbon

EPA considered various comments about the magnitude of SCC estimates (e.g., interim SCC was too low). Many commenters recommended that EPA consider higher values in the analysis to better represent the possibility of catastrophic climate damages; some recommended specific numbers to use as the upper bound (e.g., CARB) or other analyses to set a minimum lower bound (e.g., Union of Concerned Scientists). In response, EPA has focused on developing a rigorous methodology to improve its characterization of SCC rather than selecting estimates from the published literature. Accordingly, EPA continued to review the SCC literature, participated in the interagency review of SCC, and conducted the modeling exercise (see the SCC TSD for detailed discussion about the basis for the modeling exercise, the methodology, and results). Consistent with recommendations to justify any weighting schemes used, the SCC TSD explains why each model and two of the parameters (socioeconomic emissions trajectories and discount rates) are weighted equally; it also presents the rationale for the probability distribution for climate sensitivity.

EPA disagrees with one commenter who said that SCC overstates the benefits of mitigation and attributed it to emissions leakage, i.e., shifting emissions from the region subject to the GHG mitigation requirements to a location without such requirements. Emissions leakage could reduce or negate the net reduction in global emissions. However, emissions leakage would affect the estimate of total *emissions* and it is not

relevant to the value of a one ton reduction in CO_2 emissions (i.e., SCC) in this case. As discussed in the SCC TSD, we have assumed that this rule would result in small (marginal) impacts on cumulative global emissions. Even in the unlikely event that emissions leakage occurred under this rulemaking, it would not alter the cumulative global emissions trajectory underlying the SCC estimates. Regarding the potential for leakage under this rule, EPA finds the commenter's suggestion that people will move to other countries to avoid purchasing cars with higher fuel economy standards highly implausible. See Preamble III.H.5 for further discussion about considerations of turnover rate for the vehicle fleet and the implications thereof. See also the prior sections of this response for detailed discussion about treatment of uncertainty in SCC estimates, in particular the treatment of omitted impacts, and the implications for the benefits assessment.

On the other hand, the SCC TSD does not, as another commenter recommended, explicitly direct agencies to view the SCC as a minimum value for GHG reduction benefits. Instead, the SCC TSD presents detailed methodological information and a discussion of the SCC limitations, thereby enabling interpretation of the estimates as they are used in this analysis.

EPA also considered comments about the use and presentation of SCC in rulemaking analyses. For example, IPI and EDF recommended that the interagency group specify how agencies should use SCC in traditional regulatory impact analysis and agency rulemaking. In response, the SCC TSD identifies the purpose of SCC and details how to use it to estimate the benefits of policies resulting in marginal reductions in CO_2 emissions. The SCC TSD further notes that there is a separate question of whether the SCC is an appropriate tool for calculating the benefits of reduced emissions from policies that have a large (non-marginal) impact on global cumulative emissions. The analysis supporting this final rule does not attempt to answer that question.

Overall, EPA recognizes the importance of traditional regulatory impact analyses and the EPA Regulatory Impact Analysis (RIA) presents four new SCC estimates used to estimate benefits of the marginal reductions in CO_2 emissions under this final rule (see EPA RIA 7.5).

In response to Ford's recommendation to consider using CO_2 mitigation cost in lieu of SCC estimates, EPA has determined that doing so would eliminate useful information from the economic analysis about the CO_2 benefits of the standards. Indeed, Executive Order 12866 states that agencies are required, to the extent permitted by law, "to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs." Other sections of the economic analysis consider the costs to achieve the standards in this final rule (e.g., see Preamble Section III.H.3 for discussion about the annual cost per ton of GHG reduction).

In addition, SEI commented that policies designed from an insurance perspective "would not be framed in terms of cost-benefit calculations," but that economic analysis would inform selection of a least-cost strategy for meeting a risk-based standard. EPA continues to recognize that the estimates do not include all significant climate changes damages and are therefore underestimates. As a result, EPA has supplemented the quantified benefit estimates with a qualitative discussion about benefits.

It is also useful to recognize the somewhat limited role that the monetary value placed on the SCC plays in the determination of what emissions standards should be adopted in this final rule. EPA used the benefit-cost analysis as one consideration among many to evaluate the overall reasonableness of the emissions standards chosen. See preamble section III.D for a complete discussion of the various factors analyzed and balanced by EPA in determining the stringency of the final standard. In this case, the benefits of the standards are significantly greater than the costs, and this would be the case whether EPA considered the domestic value for the SCC, the global value for the SCC, or a range of values including higher SCC values. The specific range or values used in this analysis are therefore not outcome determinative as far as deciding what emissions standards to adopt, as the standards adopted by EPA would still be reasonable from a net benefits perspective under a wide range of SCC.

EPA considered Dr. Rose's comments about the number of SCC estimates presented and basis for deciding on an appropriate SCC estimate. In response, EPA has presented four SCC estimates and calculated benefits at each SCC value. The SCC TSD discusses in detail the methodological soundness of and treatment of uncertainty and risk in the four SCC estimates. In sum, the four SCC estimates are considered to capture many of the uncertainties involved in regulatory impact analysis.

Regarding the commenters' concerns about omitted impacts and recommendations to expand the presentation of information about the estimates, see above section, *Uncertainty and Treatment of Impacts in Models*, for EPA's response. In addition, the SCC TSD presents the distribution of SCC estimates, including benefit estimates at the 95th and 99th percentiles. Variation in climate sensitivity is reflected, along with other parameters that are treated as uncertain in the models, in differences between SCC estimates for a given socio-economic trajectory and discount rate. EPA has also made the full model results available in the docket for this rule; see OAR-2009-0472.

In addition, EPA notes IPI and EDF's recommendation for the interagency group to "give explicit direction to agencies on how to account for ancillary benefits associated with GHG reductions" (7246.1, pg 42). As noted above, the SCC TSD reiterates the need to document more thoroughly omitted impacts and monitor the literature for emerging research. As the research evolves, the Federal government, including EPA, is committed to exploring how modeling can be improved so that these aspects are better reflected in the SCC.

EPA agrees with the Center for Biological Diversity's observation that omission of impacts from the SCC estimates effectively assigns such impacts a value of zero, but

disagrees with the Center's interpretation of the Ninth Circuit's decision that agencies must quantify non-zero benefits. First, EPA has provided a non-zero estimate of the benefits of this rulemaking's reduction in CO_2 emissions. As discussed at length above and in the SCC TSD, some of the benefits cannot currently be quantified in a rigorous manner and were therefore presented in a qualitative manner. Both the qualitative and quantitative presentation of benefits incorporates the results of the Federal government's extensive review of SCC and recent modeling exercise, which was based on best available information. Second, the Center for Biological Diversity's argument applies most directly to rulemakings in which the economic analysis determines the stringency of the standard. See 538 F. 3d at 1201-02 (court found arbitrary NHTSA's determination not to monetize social cost of carbon when utilizing a marginal cost benefit analysis and where this decision directly influenced the stringency of the standard). Moreover, that case involved a situation where the agency assigned no monetary value to the social cost of carbon, clearly not the case here. As noted above and in our other comment responses, the stringency of this rulemaking's standard, in fact, is not determined by the monetized benefits of GHG reductions. As discussed further below, the benefit-cost analysis used for this rule played a part in EPA's overall conclusion that the rule is reasonable, but did not determine the standard's stringency. See, for example, preamble section III.D, which discusses the basis for EPA's determination and notes that issues of technology availability, cost (to both manufacturers and consumers), and available leadtime are the critical decision factors.

EPA RESPONSE B

Organization: See table below.

Commenter Affiliation	Document ID Number
California Air Resources Board	EPA-HQ-OAR-2009-0472-7189.1
Center for Biological Diversity	EPA-HQ-OAR-2009-0472-7265.1
Environmental Defense Fund	EPA-HQ-OAR-2009-0472-7246.1
Ford Motor Company	EPA-HQ-OAR-2009-0472-7082.1
Institute for Policy Integrity at New York University School of Law	EPA-HQ-OAR-2009-0472-7246.1
Natural Resources Defense Council	EPA-HQ-OAR-2009-0472-7274.1
New Jersey DEP	EPA-HQ-OAR-2009-0472-7093.1
Pew Center	EPA-HQ-OAR-2009-0472-7239.1
Private Citizen (Adcock, James)	EPA-HQ-OAR-2009-0472-5385
Private Citizen (Rose, Stephen)	EPA-HQ-OAR-2009-0472-7276.1
Stockholm Environment Institute-US Center	EPA-HQ-OAR-2009-0472-7432.1
Union of Concerned Scientists	EPA-HQ-OAR-2009-0472-7181.1
University of California Santa Barbara Bren Working Group	EPA-HQ-OAR-2009-0472-7188.1

Comments:

EPA received extensive comments about the methodology used to derive the interim SCC estimates as well as comments on the use of integrated assessment models, and equity-weighting.

Comments on the Methodology Used for Interim SCC Estimates

While the Ford Motor Company noted that the interim methodology was acceptable given available data, many commenters—representing academic and environmental organizations—expressed concerns that the filters were too narrow and stated that model-weighting averaging was inappropriate. In general, the latter group of commenters observed that averaging and model-weighting the filtered estimates further restricted the SCC dataset and obscured the variability among published SCC estimates.

For example, the Stockholm Environment Institute (SEI) characterized the interim methodology as biased and reflective of an incomplete reading of the economic literature, and stated that other studies and models should have been included (7432). In particular, SEI identified the peer-review filter as problematic because it resulted in the exclusion of SCC estimates from the heavily scrutinized Stern Review, which "offered an innovative, rigorous analysis leading to a relatively high estimate of the SCC, $85 per ton of CO_2" (7432.1, pg 3). Although the Stern Review authors did not release their results in a peer-reviewed journal, their study received a level of scrutiny "far beyond the normal peer review process for articles published in academic journals" (7432.1, pg 3).

Similarly, Dr. Rose identified reliance on the most recent versions of each model as problematic. He stated that because there has been little change in SCC modeling since 2001, it was incorrect to assume that the most recent estimates are superior. The commenter concluded that limiting consideration to "the most recent results reduces sample size and makes results highly contingent on most recent applications and assumptions used" (7276.1, pg 1-2).

Moreover, the Natural Resources Defense Council (NRDC) described the interagency group's reliance on model-weighted averages, which further compounded this distortion and failed to capture estimates for extreme climate events, as "astonishing," based on the current understanding of climate science (7274.1, pg 14). Other commenters likewise concluded that the filters and model-weighting procedures exacerbated what is widely understood to be a partial accounting of mitigation benefits (e.g., 7432.1, 7276.1).

Several commenters expressed concerns about averaging SCC estimates from different discount rates; one commenter clarified that this is incorrect because the discount rates represent different judgments about "the value of temporal trade-offs" (7276.1, pg 3; see also 7188.1, 7208.1). That is, estimates from each discount rate encompass inconsistent

assumptions about the type of investments made and how their value changes over time. In addition, EPA received extensive comments about the selection of discount rates, which is discussed separately in Response to Comments [A].

Finally, one commenter recommended an alternative approach to monetize the benefits of reductions in CO_2 emissions (see 5385, pg 3). Specifically, this commenter recommended extrapolating the results of local-scale ecosystem service valuations, such as one for Puget Sound, to a global estimate of SCC.

Comments on Use of Integrated Assessment Models

Three commenters discussed the limitations of the integrated assessment models, concluding that the interagency group's selection of models and reliance on the model authors' datasets contributed to the downward bias of the interim SCC estimates (7432.1, 7239.1, 7274.1). One commenter observed that the integrated assessment models rely heavily on projections of GHG emissions and temperatures from the Intergovernmental Panel on Climate Change (IPCC) to estimate the value of economic damages and cited evidence to support the view that these projections are conservative.[10]

Indeed, the Stockholm Environment Institute characterized all three models' default datasets as "embody[ing] controversial judgments" (7432.1, pg 4). The Stockholm Environment Institute presented numerous examples of such judgments, including the "surprisingly low" estimate of climate damages in DICE. The Stockholm Environment Institute clarified that DICE relies on estimates of agricultural impacts developed in the 1990s that were "excessively optimistic about potential benefits from warming, and contained some basic analytical errors" (7432.1, pg 6). The Stockholm Environment Institute further noted that a UC-Berkeley economist has run DICE using the current data and found that climate damages in the U.S. could be four times greater than those derived using the DICE default dataset (7432.1, pg 6).

Accordingly, these commenters recommended the agencies run the models with other datasets and also modify some of the models' assumptions. For example, they suggested modifying certain model parameters in the exercise—e.g., global value of a statistical life (VSL), an adaptation function, and damage functions allowing cross-sectoral impacts (7274.1, 7432.1).

Comments on Equity Weighting

EDF and IPI discussed an inconsistency between the discounting approach used in the proposed rule, which applies differential equity weights on a timescale, and "the decision

[10] Commenter stated that "following every IPCC assessment report (four to date), many predictions have turned out worse than expected. Each IPCC assessment report is grimmer than the previous. There are already signs that the last assessment report of 2007 (the Fourth Assessment Report, FAR) had overly optimistic 'best guesses.'" Commenter cited findings published after release of the FAR, including evidence that summer sea ice could disappear by 2030, much sooner than the IPCC's projection of disappearance by the end of the century. See Science Magazine 326(5955): 926-928. (OAR-2009-0472-7274.1, pg 10).

not to apply differential equity weights to the impacts on different income groups within a single generation" (7276.1, pg 8). They clarified the point "is not necessarily to recommend that equity weights be applied for intratemporal transfers: although there would appear to be strong ethical grounds for such an approach, the determination of those equity weights would be an enormous challenge in itself" (7276.1, pg 8).

NRDC likewise noted an inconsistency and stated that "failing to weigh damages by income levels is inconsistent with economic theory" (7274.1, page 5). NRDC further noted it is "difficult to justify [not using equity weights] on ethical grounds: most of the world's poor neither emitted the CO_2 emissions responsible for current atmospheric concentration levels, nor economically benefited from them—resulting in the poor having the least ability to absorb climate damages" (7274.1, page 6). NRDC recommended that EPA apply equity-weights to the SCC estimates by taking into account the relative reductions in wealth in different regions of the world and use a number for the VSL that is equal between all countries and populations. See EPA-HQ-OAR-2009-0472-7274.1 for further discussion.

EPA Response B:

The commenters' input informed the development of the new SCC estimates. This response addresses the following issues identified by the commenters: the methodology used to derive the interim estimates, the use of integrated assessment models, and equity-weighting (see letters from California Air Resources Board, Center for Biological Diversity, Ford, NJ DEP, Natural Resources Defense Council, Pew Center on Climate, Dr. Rose, Stockholm Environment Institute, University of California Santa Barbara Bren Working Group, and Union of Concerned Scientists). EPA has responded elsewhere to the commenters' other comments related to SCC. Specifically, refer to Response [A] for EPA's response to comments regarding discount rate, uncertainty and risk, and magnitude and uses of the social cost of carbon, and to Response [C] for EPA's response to comments regarding global and domestic valuations of SCC.

Methodology Used to Derive Interim Estimates

EPA received and considered extensive comments about the methodology used to derive the interim SCC estimates. EPA recognized the limitations of the interim approach—a meta-analysis that relied on published SCC estimates—but judged it as the best option given the limited time available to coordinate among federal agencies and develop SCC estimates for the proposed rule. However, EPA did not continue with its interim approach and instead developed new SCC estimates for this rule. Specifically, the interagency SCC group, in which EPA participated, reconvened on a regular basis to generate improved SCC estimates that respond to the concerns raised by commenters. As noted in Preamble III.H.6, EPA has critically evaluated the decisions of the group and the new SCC estimates and endorses them as reasonable for this final rule.

The revised SCC methodology responds to comments in several key ways. First, we agree with the commenters' concerns about the use of model-weighted means (e.g., see NRDC, SEI, Dr. Rose). The new results are weighted equally by model because the exercise produced an equal number of estimates for each model. Second, we agree that it is inappropriate to combine SCC estimates across discount rates. None of the revised SCC estimates has been averaged across discount rates. (See Response to Comment A for consideration of comments about the rationale for discount rates, approach used to select rates, the magnitude of rates, and treatment of uncertainty.) The Technical Support Document, *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (hereafter, "SCC TSD"), also responds to these comments by presenting the rationale for discount rate selection.[11] Third, as discussed further in Response to Comment A, the modeling exercise resulted in a fuller distribution of SCC estimates and better accounted for uncertainty through a Monte Carlo analysis. See the SCC TSD for detailed explanation about probabilistic treatment of climate sensitivity in the modeling exercise.

The commenters also had concerns about the filters used to narrow down the pool of existing SCC estimates for consideration in the proposed rule, noting that they were overly restrictive, or that the sample otherwise excluded key studies (e.g., Dr. Rose, SEI, UC-Santa Barbara Bren Working Group). In response, EPA notes that the approach used in this final rule—conducting new model runs—has avoided this particular challenge. As noted in the SCC TSD, the modeling exercise produced a vast amount of data for consideration.

In addition, EPA considered comments about the selection of a growth rate applied to climate damages for the interim SCC estimates (CARB, Center for Biological Diversity). Rather than assuming a constant annual growth rate, we estimated the growth rate of the SCC directly using the Dynamic Integrated Climate and Economy (DICE), Policy Analysis of the Greenhouse Effect (PAGE), and Climate Framework for Uncertainty, Negotiation, and Distribution (FUND) models. This approach helped to ensure that the estimates are internally consistent with other modeling assumptions. See the SCC TSD for a table that illustrates how the growth rate for these four SCC estimates varies over time; the SCC TSD also presents the full set of annual SCC estimates between 2010 and 2050.

The California Air Resources Board presented a valid critique about the non-trivial variation in climate scenarios underlying the interim SCC estimates; Dr. Rose also described the selection of socioeconomic emissions scenarios for the interim estimates as limited. For the new SCC estimates, we used socio-economic and emission trajectories that span a range of plausible scenarios. Five trajectories were selected from the recent

[11] Interagency Working Group on Social Cost of Carbon, U.S. Government, with participation by Council of Economic Advisers, Council on Environmental Quality, Department of Agriculture, Department of Commerce, Department of Energy, Department of Transportation, Environmental Protection Agency, National Economic Council, Office of Energy and Climate Change, Office of Management and Budget, Office of Science and Technology Policy, and Department of Treasury, "*Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*," February 2010. EPA-HQ-OAR-2009-0472

Stanford Energy Modeling Forum exercise, EMF-22; each trajectory was used consistently in the three models. Four trajectories represent potential business-as-usual (BAU) growth in population, wealth, and emissions and are associated with CO_2 (only) concentrations ranging from 612 to 889 ppm in 2100. The fifth trajectory represents an emissions pathway that achieves stabilization at 550 ppm CO_2e (i.e., CO_2-only concentrations of 425 – 484 ppm or a radiative forcing of 3.7 W/m^2) in 2100, a lower-than-BAU trajectory.

We note Dr. Rose's comment that "it would be arbitrary to use SCC estimates off of aspirational pathways for policies that generate small net changes in global emissions. Instead, estimates off of baseline projections are more consistent with current policy decisions with marginal global GHG emissions implications, as well as a risk management approach designed to internalize risks that the USG wishes to avoid or hedge against" (7276.1, pg 2). However, as explained in the SCC TSD, the modeling exercised relied primarily on BAU trajectories but also included a lower-than-BAU trajectory that would be consistent with widespread action by countries to mitigate GHG emissions. The lower-than-BAU trajectory was chosen because it represents the most stringent case analyzed by the EMF-22 where all the models converge: a 550 ppm, not to exceed, full participation scenario. See the SCC TSD for complete discussion.

Regarding Dr. Rose's question about why the Hope (2006) estimates were labeled as 5 percent: One common equation used to calculate the discount rate is the Ramsey equation: $r = \rho + g*\eta$, where ρ is the pure rate of time preference, g is the growth rate, and η is the elasticity of the marginal utility of consumption. The pure rate of time preference cited in the Hope (2006) article is 3% per year. While the actual discount rate varies over time, it is relatively common to refer to the discount rate as the pure rate of time preference plus 2%, where the 2% is roughly the growth rate times the elasticity of the marginal utility of consumption. A more accurate categorization would be "approximately 5%" or "a pure rate of time preference of 3%." As noted in Response A, EPA used a different approach to discount SCC estimates in the final rule.

Dr. Rose also requested more information to understand the application of Newell and Pizer discounting to the interim SCC estimates. The undiscounted stream of benefits was not available for each of the studies included in this analysis. The way that the Newell and Pizer (2003) findings were adapted for the interim values was to apply the adjustment factors implied by either their preferred random walk model or mean-reverting model. According to the random walk model, SCC estimates based on a 3% or 5% discount rate are increased by 70.733% and 89.8%, respectively. The mean-reverting model implies increases of 10.733% and 16.8% for estimates based on a 3% or 5% discount rate.

Note Newell and Pizer based adjustment factors were not applied to estimates from Guo et al. (2006) that use a different approach to account for discount rate uncertainty.

EPA notes Dr. Rose's recommendation to ensure consistency in presenting the SCC analysis in each agency's section of the joint rule. Tables in the proposed rule, for example, used different dollar years to report the same SCC estimates (e.g, 2007$ in

EPA's preamble section and 2006$ in NHTSA's preamble section). The agencies agree with the commenter's recommendation and have ensured to the extent possible that the sections in this rule are consistent. Moreover, the same detailed analysis of SCC presented in the SCC TSD supports the entire rulemaking.

In response to Dr. Rose's request for information about base years and Newell and Pizer discounting, please see the table below.

Model	**Study**	Base year (Best available info)	Year Dollars (Best available info)
FUND	Anthoff et al. 2009	2000	2000
FUND	Link and Tol 2004	1995	1995
FUND	Guo et al. 2006	1995	1995
PAGE	Wahba & Hope 2006	2000	2000
PAGE	Hope 2006	2000	2000
DICE	Nordhaus 2008	2005	2005

Additionally, the commenter requested a complete list of references. The references are as follows:

- Anthoff, D., C. Hepburn, and R. Tol. 2009. Equity weighting and the marginal damage costs of climate change. Ecological Economics 68: 836:849.

- Guo, J., C.J. Hepburn, R. Tol, and D. Antoff. 2006. Discounting and the social cost of carbon: a closer look at uncertainty. Environmental Science and Policy 9: 205-216.

- Hope, Chris. 2008. Optimal carbon emissions and the social cost of carbon over time under uncertainty. The Integrated Assessment Journal 8(1): 107-122.

- Hope, Chris. 2006. The Marginal Impact of CO2 from PAGE2002: An Integrated Assessment Model Incorporating the IPCC's Five Reasons for Concern. The Integrated Assessment Journal 6(1): 19-56.

- Link, P.M., and R. Tol. 2004. Possible economic impacts of a shutdown of the thermohaline circulation: an application of FUND. Portuguese Economic Journal 3: 99-114.

- Newell, R., and W. Pizer. 2003. Discounting the distant future: how much do uncertain rates increase valuations? Journal of Environmental Economics and

Management 46: 52-71.

- Nordhaus, William. 2008. A Question of Balance: Weighing the Options on Global Warming Policies. New Haven, CT: Yale University Press.

- Tol, R. 2008. The Social Cost of Carbon: Trends, Outliers and Catastrophes. Economics: The Open-Access, Open-Assessment E-Journal 2(25): 1-24.

- Wahba, Mohammed, and Chris Hope. 2006. The marginal impact of carbon emissions under two scenarios of future emissions. Energy Policy 34: 3305-3316.

Other Methodology Comments. Consistent with Dr. Rose's recommendation to "strive for an enduring and transparent methodology that can be readily and transparently updated," the SCC TSD presents a detailed discussion of the development of the interagency modeling exercise and the resulting SCC estimates. As noted in the SCC TSD, the main objective of this process was to develop a range of SCC values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SCC estimates used in this rulemaking process.

Furthermore, the Federal government has committed to updating the new SCC estimates as the science and economic understanding of climate change and its impacts on society improves over time. The interagency group set a preliminary goal of revisiting the SCC values within two years or at such time as substantially updated models become available, and to continue to support research in this area.

EPA notes with interest the valuation of Puget Sound ecosystem services identified by commenter 5385, but regards the commenter's suggestion to extrapolate these results to a national or global SCC as problematic. In particular, the commenter's recommendation does not incorporate findings from the existing scientific and economic literature about climate change impacts on other sectors. Furthermore, while the estimated value of ecosystem services in Puget Sound could inform assessments of the monetized value of climate change impacts in that region, it does not assign a dollar value to the impacts associated with a marginal unit of CO_2 emissions. In short, it lacks a defensible approach that accounts for the various complexities involved in projecting CO_2 emissions and associated climate impacts on global scale.

In contrast, the integrated assessment models used to estimate the new SCCs combine climate processes, economic growth, and feedbacks between the climate and the global economy into a single modeling framework. As discussed in the SCC TSD, these models translate emissions into changes in atmospheric greenhouse concentrations, atmospheric concentrations into changes in temperature, and changes in temperature into economic damages. The emissions projections used in the models are based on specified socio-economic (GDP and population) pathways. These emissions are translated into concentrations using the carbon cycle built into each model, and concentrations are

translated into warming based on each model's simplified representation of the climate and a key parameter, climate sensitivity.

Use of Integrated Assessment Models

Several commenters discussed the use of the integrated assessment models, concluding that the interagency group's selection of models and reliance on the model authors' datasets contributed to the downward bias of the interim SCC estimates.

Model choice. EPA agrees with SEI that DICE, FUND, and PAGE are not the only relevant climate economics models and has clarified its characterization of these models as well as its rationale for continuing to use them in the final rule. Overall, we find DICE, FUND, and PAGE useful because they combine climate processes, economic growth, and feedbacks between the climate and the global economy into a single modeling framework, but we recognize that this advantage comes at the expense of a more detailed representation of the underlying climatic and economic systems. However, as noted by SEI, these models have "been widely used by other investigators, precisely because of their simplicity and transparency" (7432.1, pg 4). Moreover, other integrated assessment models have not linked physical impacts to economic damages. The limited amount of research linking climate impacts to economic damages makes this exercise even more difficult (see the SCC TSD for more information).

Others commented on the version of the models used to derive the interim SCC estimates. Pew noted that few studies have been published using the most recent version, but identified several expected to be released by the time of the final rule and encouraged EPA to account for those. As discussed in the SCC TSD, EPA used SCC estimates from new model runs rather than selecting from those in the literature; EPA has continued to review developments in the SCC literature.

We note that Pew's comments about the values resulting from the most recent version of FUND are incorrect. According to EPA's March 2010 communication with Dr. Anthoff, all of the deterministic SCC estimates were positive for the discount rates investigated in a paper that he prepared for Pew using FUND 3.5; this does not mean that FUND 3.5 produces positive SCCs for *any* discount rate. Also, FUND uses a Major.Minor numbering system rather than calendar year to label the versions. EPA used the latest version of this model, FUND 3.5, that was available at the time of the modeling exercise.

Datasets used in models. NRDC observed that the integrated assessment models rely heavily on projections of GHG emissions and temperatures from the Intergovernmental Panel on Climate Change (IPCC) to estimate the value of economic damages and cited evidence to support the view that these projections are conservative. Also, SEI characterized all three models' default datasets as "embody[ing] controversial judgments" (7432.1, pg 5). SEI presented numerous examples of such judgments, including the "surprisingly low" estimate of climate damages in DICE, and clarified that DICE relies on estimates of agricultural impacts developed in the 1990s that were "excessively optimistic about potential benefits from warming, and contained some basic

analytical errors" (7432.1, pg 6). SEI further noted that a UC-Berkeley economist has run DICE using the current data and found that climate damages in the U.S. could be four times greater than those derived using the DICE default dataset (7432.1, pg 6).

EPA regards with interest the commenters' specific recommendations to modify model parameters that were not adjusted in the exercise—e.g., global value of a statistical life (VSL), an adaptation function, and damage functions allowing cross-sectoral impacts (e.g., NRDC and SEI). Research gaps and practical constraints required us to limit modification of the models to socioeconomic and emissions scenarios, climate sensitivity, and discount rate. Therefore, the modeling exercise relied on the default values in the latest available version of each model for the remaining parameters. Moreover, continuing to use the models' default values for some parameters allowed the exercise to account for different approaches to quantifying damages. While EPA recognizes that the models' translations of physical impacts to economic values are incomplete, approximate, and highly uncertain, it regards them as the best available representations.

As noted in Response A, the SCC TSD further emphasizes the need to explore the sensitivity of the results to other aspects of the models, in particular how the damage functions incorporate adaptation, technological change, and catastrophic damages. The Federal government is committed to supporting new research and exploring how to value the benefits of reduced GHG emissions. As the research evolves, the Federal government is also committed to exploring how modeling can be improved so that these aspects are better reflected in the SCC. The interagency group plans to revisit the SCC estimates within two years.

Equity weighting and value of statistical life

NRDC recommended that EPA apply equity-weights to the SCC estimates by taking into account the relative reductions in wealth in different regions of the world and use a number for the VSL that is equal between all countries and populations. As noted in the SCC TSD, we recognize the inconsistency between accounting for wealth differences over time through the discount rate and declining to do so on a geographical scale. However, after considering the literature on equity-weighting, we decided not to use equity-weights because putting it into practice and defending it for domestic regulatory analysis would raise complex conceptual, empirical, and normative problems (see the SCC TSD).

As discussed in Response A, the modeling exercise relied on the default values for VSL because it was not one of the parameters chosen to be held constant across all three models.

EPA RESPONSE C

Organization: See Table below.

Commenter Affiliation	Document ID Number

Environmental Defense Fund	EPA-HQ-OAR-2009-0472-7246.1
Georgia-Pacific	EPA-HQ-OAR-2009-0472-7122.1
National Automobile Dealers Association (NADA)	EPA-HQ-OAR-2009-0472-7182.1
National Petrochemical & Refiners Association	EPA-HQ-OAR-2009-0472-7234.1
Natural Resources Defense Council	EPA-HQ-OAR-2009-0472-7274.1
NYU Institute for Policy Integrity	EPA-HQ-OAR-2009-0472-7246.1
Pew Center	EPA-HQ-OAR-2009-0472-7239.1
Private Citizen (Adcock, James)	EPA-HQ-OAR-2009-0472-5385
Private Citizen (Rose, Stephen)	EPA-HQ-OAR-2009-0472-7276.1
Texas Chemical Council	EPA-HQ-OAR-2009-0472-7290
University of California Santa Barbara Bren Working Group	EPA-HQ-OAR-2009-0472-7188.1

Comment Summary:

Seven commenters, representing academia and environmental organizations, supported the proposed rule's preference for global SCC estimates while several industry groups stated that under the Clean Air Act, EPA is prohibited from using global estimates. The commenters supporting a global SCC described it as the most appropriate way to account for the public good aspects of GHG emissions and climate protection.

The Environmental Defense Fund and NYU Institute for Policy Integrity described climate stability as a special public good case because it is a global one, meaning that no single actor can provide climate stability. Maintaining or achieving the public good—climate stability—must involve coordination of many sovereign countries, all of which have an incentive to do nothing and enjoy global benefits when other countries incur the costs of GHG mitigation (7246.1, pg 37).

Moreover, the Environmental Defense Fund and NYU Institute for Policy Integrity maintained that consideration of domestic SCC does not solve the global public good problem. These commenters stated that if all countries based GHG reductions on domestic SCC values, it would "result in sub-optimal protection of climate stability [because] the global SCC is not a population-weighted average of domestic SCCs, but instead the aggregate of all of the harms associated with climate change" (7246.1, pg 37). For more details regarding comments that support use of a global SCC, see EPA-HQ-OAR-2009-0472-7246.1, -7274.1, -7239.1, -7276.1, -7188.1, and -5385.

One commenter who supported use of global SCC estimates stated that it was unclear how the agencies planned to use domestic estimates, thereby making it difficult to comment on domestic SCC estimates (7276.1). NRDC also noted a lack of clarity regarding the agencies' intentions for domestic SCC estimates but concluded that it would be inappropriate to use domestic estimates in any situation (7274.1).

NRDC based its support for use of a global SCC on the global, public goods aspect of GHG emissions as well as ethical considerations. Specifically, NRDC stated that from an ethical standpoint, it cannot support a U.S. SCC estimate, which would effectively assign a value of zero to the damages imposed on other countries by U.S. emissions. NRDC found this particularly troubling because "many countries, especially poor ones, did not contribute to the current CO_2 levels in the atmosphere, yet will suffer the worst consequences. Perversely, developed countries obtained their income status by emitting greenhouse gases, and as a result have more resources to absorb climate damages, while the opposite is true of the poor countries" (7274.1, pg 24).

The commenters that disagreed with use of a global SCC argued that EPA cannot permissibly consider a global value because it lacks authority to consider the international effects of domestic emissions in crafting emission standards under section 202 (a). These commenters further argued that Congress was explicit when it wanted such effects to be considered, referring to section 115 of the Act, which authorizes regulation of domestic pollutant emissions due to their international effect under specified circumstances. The commenters also referred to the general presumption that Federal statutes are presumed not to have extra-territorial effect. For more details, see EPA-HQ-OAR-2009-0472-7234.1, -7290, -7182.1, and -7122.1.

EPA Response C:

This response presents EPA's consideration of and response to comments from regarding the use of global and domestic valuations of SCC (see comments from Dr. Rose, National Automobile Dealers Association, NYU Institute for Policy Integrity and Environmental Defense Fund, University of California Santa Barbara Bren Working Group, Pew Center on Climate, Natural Resources Defense Council, and Texas Chemical Council).

In sum, the final rule continues to focus on global SCC values because of the global, public good aspects of greenhouse gas emissions. EPA prefers a global measure of GHG mitigation benefits because of the unusual aspects of the climate change problem—i.e., GHG emissions cause the same damage regardless of the location of their emission; climate change occurs over very long time horizons, and it represents a problem that the United States cannot solve independently (see the Technical Support Document, *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (hereafter, "SCC TSD")).[12]

Several commenters argued that EPA cannot permissibly consider a global value because it lacks authority to consider the international effects of domestic emissions in crafting emission standards under section 202 (a) (1). These commenters further argued that

[12] Interagency Working Group on Social Cost of Carbon, U.S. Government, with participation by Council of Economic Advisers, Council on Environmental Quality, Department of Agriculture, Department of Commerce, Department of Energy, Department of Transportation, Environmental Protection Agency, National Economic Council, Office of Energy and Climate Change, Office of Management and Budget, Office of Science and Technology Policy, and Department of Treasury, "*Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*," February 2010. EPA-HQ-OAR-2009-0472

Congress was explicit when it wanted such effects to be considered, referring to section 115 of the Act, which authorizes regulation of domestic pollutant emissions due to their international effect under specified circumstances. The commenters also referred to the general presumption that Federal statutes are presumed not to have extra-territorial effect.

The commenters have misapprehended the analysis of global and domestic SCC. First, EPA's regulation does not exercise extraterritorial effect. The regulation sets standards for new motor vehicles produced or imported into the United States; hence, the activity it regulates is domestic activity. The issue here is not the extraterritorial exercise of regulatory authority over conduct occurring overseas, but how to place a monetary value on a reduction in domestic emissions, with the commenter arguing that EPA may not consider effects occurring outside the borders of the US when valuing the benefits of reductions achieved under section 202(a) (1). In this case, the emissions reductions will marginally reduce the overall global contribution of GHG emissions to the atmosphere, affecting the global atmospheric concentrations of GHGs. This will then have a marginal effect on global climate change, with resulting impacts both inside the US and around the world. There is no issue that the impacts from global climate change that occur in the US are appropriate to consider in valuing the benefits of these domestic GHG reductions.

However, there is also a value to the US from domestic emissions reductions that reduce the harm occurring globally. First, impacts from climate change occurring overseas can create economic, trade, humanitarian and national security issues for the US. For example, climate change may exacerbate problems (e.g., food security or water supply) in relatively poor and politically volatile countries that raise humanitarian issues and national security issues for the United States.[13] Second, the US will gain the greatest benefit from reducing domestic emissions of GHGs if there is a global response to the global problem of climate change. Given the nature of the public good at issue, a global response would maximize the benefits the US receives from reducing GHGs. Using a global SCC in valuing the domestic reductions from this final rule is most consistent with this outcome, while using a domestic SCC is not. For both of these reasons, considering the global SCC is an appropriate way to value the benefits to the US from domestic GHG reductions under section 202(a) (1).

Second, this situation is not analogous to section 115 of the Act, which calls for control of domestic emissions if certain conditions are met concerning emissions in the U.S. causing or contributing to air pollution that is reasonably anticipated to endanger public health or welfare in a foreign country. Mandating control of domestic emissions in certain circumstances based on the impact of those emissions on a foreign country does not indicate any intention by Congress on the very different issue involved here. Use of the global SCC in the benefits analysis for this rule is not an issue of the authority or the obligation to regulate domestic emissions of GHGs from new motor vehicles. Our authority to adopt standards stems from the endangerment and contribution findings that

[13] See US EPA, *Technical Support Document, Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*, December 8, 2009, for a complete discussion about the implications of international climate impacts for the US, in docket EPA-HQ-OAR-2009-0171.

have been made under section 202(a) (1). The issue here is how to value those domestic emissions reductions in considering the benefits of the reductions. That is not the issue Congress addressed in section 115, when it authorized regulatory controls if certain conditions were met. Congress' decisions on that issue in section 115 do not limit or take away any of EPA's discretion on how to value the benefits of GHG reductions from the emissions standards adopted under section 202(a).[14]

Finally, it is useful to recognize the somewhat limited role that the monetary value placed on the SCC plays in the determination of what emissions standards should be adopted. As noted above, the value of the SCC is not relevant to whether EPA has the authority or the obligation to adopt emissions standards, as that stems from the endangerment and contribution findings. In addition, the levels of the standards adopted by EPA have been determined based on the effectiveness of the technology that will be available, their cost, and the appropriate leadtime for incorporation of that technology in the light-duty vehicle fleet. See the detailed explanation in section III. D of the preamble to the final rule for further discussion of this issue. The cost-benefit analysis is used to help evaluate the overall reasonableness of the emissions standards chosen by EPA. In this case, the benefits of the standards are significantly greater than the costs, and (as noted earlier in this response) this would be the case whether EPA considered the domestic value for the SCC, the global value for the SCC, or a range of values including higher SCC values. The specific range or values used in this analysis are therefore not outcome determinative as far as deciding what emissions standards to adopt, as the standards adopted by EPA would still be reasonable from a net benefits perspective under a wide range of SCC.

Nonetheless, EPA considered the available estimates of domestic SCC values to determine how global SCC values could be adjusted to national or regional levels. As explained further in the SCC TSD, EPA regards this approach as highly speculative and recognizes that there is no *a priori* reason why domestic benefits should be a constant fraction of net global benefit estimate. While there is compelling evidence suggesting that the US represents a non-constant fraction of global values, a rigorous manner to quantify that fraction in has not emerged. Indeed, current models do not quantify many of the spillover effects identified by commenters IPI, EDF, and NRDC, such as the U.S. military position in the world. Accordingly, the final rule presents only global SCC values; the SCC TSD presents a range of values that should be used to adjust the global SCC to calculate domestic effects.

4.5.5 Vehicle Sales Assumptions

[14] The commenters are also incorrect in maintaining that because Congress addressed in section 115 the issue of an obligation to adopt emissions controls based on the effect domestic emissions have outside the US, it necessarily precluded consideration of those effects under section 202(a). See Catawba County v. EPA, 571 F. 3d 20, 34 (D.C. Cir. 2009) (a congressional mandate in one section and silence in another often "suggests not a prohibition but simply a decision *not to mandate* any solution in the second context, i.e., to leave the question to agency discretion.' (internal citation omitted, emphasis original)). In any case, as explained above, section 115 addresses the different issue of authority to regulate, and does not address how to value a reduction of domestic emissions for purposes of evaluating the costs and benefits of an otherwise authorized regulation.

Organization: National Automobile Dealers Association

Comment:

The National Program proposal reasonably assumes buyers will value any fuel savings associated with the purchase of a new motor vehicle over a five-year period, rather than over a vehicle's full useful life. 74 Fed. Reg. 49669-70. Even at high fuel prices, consumers who view fuel economy as an important purchase criteria will be hard pressed to make the case for buying a more fuel efficient new vehicle if the up-front capital costs associated with doing so cannot be recouped in short order. Of course, for purposes of calculating payback, real-world purchaser finance costs, opportunity costs, and additional maintenance costs all should be accounted for.

EPA Response:

EPA has continued to use the assumption that consumers will consider fuel savings over a five-year period for its vehicle sales impact analysis. The payback analysis in Preamble Section III.H.5 has included additional purchasing costs, such as sales tax, insurance, and financing costs, as detailed in EPA's RIA Section 8.1.3. As discussed in Preamble Sections III.D. and III.H.1, the opportunity costs of these standards are addressed through cost estimation based on holding vehicle performance, utility, safety, and other attributes constant while improving fuel economy.

Organization: James Adcock

Comment:

Assuming a 5-year horizon for the consumer's valuation of MPG improvements is the same as assuming vehicle purchasers assume that they will sell their vehicles in 5 years and be able to receive no premium on that sale for high MPG. But, on the contrary consumer are well-aware and it has been well-reported that higher MPG vehicles hold their resale value better than lower MPG vehicles - and that low MPG SUVs and Trucks are hard to unload at all! Thus the need for the "Cash for Clunkers" program to allow owners of low MPG vehicles to unload these vehicles on the US government since there was no other willing buyer. Setting these low MPG standards simply is setting up the US Government for "Cash for Clunkers 2 .0" in another decade's time! In general NHTSA's leniency towards large trucks negates the current administration's investment in "Cash for Clunkers" -- the one hand works against the other.

E-134: 5-year cutoff on payback period on the assumption that consumers only value a vehicles' MPG technology on the first five years - is not a rational assumption because consumer well-know how hard it is to unload gas guzzlers - hence the need for a "Cash for Clunkers" program. Choosing this irrational 5-year cutoff assumption in turn represents a large reduction in "duration" effectively causing a much higher depreciation rate than the claim 3% societal discount rate.

EPA Response:

EPA's five-year payback period is for average consumer behavior. Some consumers will put more emphasis on fuel economy when buying vehicles, and others may use shorter payback periods. The analysis does not adjust vehicle resale value for the fuel economy of the vehicle, based on uncertainty of the role of fuel economy in vehicle purchase decisions (discussed in RIA Chapter 8.1). The analysis does include resale value as a proportion of initial vehicle price; if vehicles with more fuel economy are more expensive, their resale values will be higher.

4.5.6 Vehicle survival assumptions

No comments were received on vehicle survival assumptions. Several comments on total lifetime VMT are found in Section 5.3.2 of this document.

4.5.7. Total Vehicle Use

Organization: New York State Department of Environmental Conservation

Comment:

Vehicle Lifetime Mileage (Preamble page 49521)
EPA and NHTSA use 190,971 miles as the lifetime for cars and 221,199 miles, for light trucks. The derivation of these lifetimes is unclear to us, as is the rationale for a difference between cars and light, trucks . The composition of the light truck fleet, as well as the use these vehicles see, has changed significantly in the past 30 years, to more closely resemble the passenger car fleet. The source of these lifetime mileages should be discussed in the rulemaking documents, and available for public review. [OAR-2009-0472-7454, p.1]

EPA Response:

The procedures used by EPA and NHTSA to derive their estimates of expected lifetime VMT for passenger cars and light trucks, as well as the agencies' estimates of the total number of miles driven by model year 2012-16 cars and light trucks during each year of their lifetimes, were described in detail in the rulemaking documents and available for public review. Specifically, the methodologies and assumptions used in developing these estimates were described in detail in EPA and NHTSA's Draft Joint Technical Support Document, Section 4.2.4, pp. 4-7 to 4-15. The updated FRM analysis is available in EPA and NHTSA' Joint Technical Support Document Section 4.2.3. The lifetime VMT numbers used in the final rulemaking increased slightly because of a decrease in projected fuel prices between AEO 2009 and AEO 2010. The resulting values are 195,264 miles for cars and 225,865 miles for trucks.

As noted in the documentation, the analysis is based upon the January 2006 NHTSA report "Vehicle Survivability and Travel Mileage Schedules," (Docket ID: EPA-HQ-

OAR-2009-0472-0126) which incorporates the best available data on fleet composition and use.

4.5.8. Accounting for the rebound effect of higher fuel economy

Organization: State of New Jersey

Comment:

The fuel economy rebound effect refers to the fraction of fuel savings expected to result from an increase in vehicle fuel economy - particularly one required by higher fuel efficiency standards -that is offset by additional vehicle use. The Department believes the rebound rate of 10 percent used by the USEPA in the proposal is justified given the historical decline in the magnitude of the rebound effect. The Department also supports the proposal's findings regarding vehicle sales whereby the proposal projects a positive impact on vehicle sales due to reduced fuel costs outweighing the costs of meeting the new emission standards. [OAR-2009-0472-7109.1, p.10]

EPA Response:

EPA appreciates New Jersey's comments supporting our proposed value of 10 percent for the rebound effect. Based in part on these comments, we have decided to maintain the 10 percent rebound value for the final rulemaking.

Organization: California Air Resources Board
International Council on Clean Transportation
Missouri Department of Natural Resources, Air Pollution Control Program

Comment:

CARB supports the decision to reduce the rebound effect to 10% from previous analyses using 15%. As previously commented (Document ID No. NHTSA-2008-0089-0173), CARB believes 10% to be the upper bound for the rebound effect. Thus, the agencies may wish to consider further reducing this effect to 5%, which is more consistent with the latest results from Small (2009) on the projected dynamic rebound effect accounting for fuel economy regulations. NHTSA's sensitivity analysis shows that this adjustment in rebound effect would increase fuel savings and emission reductions by 5% and discounted benefits by 4%. (PRIA p.456) Thus, the regulation impacts are somewhat sensitive to the assumption on the magnitude of the rebound effect and a lower value could be justified [OAR-2009-0472-7189.1, p.16]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

The agencies used a fixed estimate of 10% for the *rebound effect*. A wide range of historical studies was considered by the agencies in arriving at this estimate and NHTSA conducted some modeling of their own. Recent studies by Small and VanDender (2007) and Greene (2009) demonstrate that the rebound effect is linked to personal income and vehicle efficiency, as well as fuel prices, and has been declining over time.

EPA stated that if they used a dynamic estimate of the future rebound effect based upon the Small and VanDender work, they would use a value of 5% or lower. EPA invited comments:

-"on other alternatives for estimating the rebound effect".

- "on the extent to which the short run elasticity of demand for gasoline with respect to its price can provide useful information about the size of the rebound effect".

- "on whether it would be appropriate to use the price elasticity of demand for gasoline, or other alternative approaches, to guide the choice of a value for the rebound effect".

The Small and VanDender work is the proper basis for calculating the rebound effect. Small and VanDender made a major contribution to the field by incorporating economic impacts and the cost of driving into calculations of price elasticity of demand. This is much more appropriate than assuming a fixed 10% rebound effect that does not take into account future changes in vehicle efficiency, fuel prices, and future income. Dynamic estimates should be used to calculate the future rebound effect.

ICCT believes that estimates of the short run elasticity of demand for gasoline with respect to price can provide a useful point of comparison for rebound estimates derived by other methodologies, but should not be used to guide the choice of a value for the rebound effect.

[OAR-2009-0472-7156.1, pp.14-15]

Although it is somewhat reasonable to assume that some people will drive more if their vehicles get better gas mileage, there is no evidence presented in the report showing that the average consumer automatically increases the amount they drive when they get more miles per gallon. Nor does the report fully explain why 10% is assumed to be the estimated increase. In addition, the report's assumption that the rebound effect will result in no overall emissions reductions from the actual driving of vehicles appears to be extremely conservative in the estimation of emissions reductions resulting from higher CAFE standards. In the notice, EPA acknowledges that some recent studies have shown that as time goes on, the rebound effect is actually lower than 10%, especially in future years: Therefore, using an across the board 10% value should be reconsidered. Another important consideration should be the price of gasoline. Regardless of the increase' in miles per gallon for a vehicle, gasoline prices have been shown to have a very significant impact on miles driven. The negative effects of gasoline prices on driving was clearly

shown in the summer of 2008, when gas prices climbed to record rates, and drivers nationwide dramatically decreased their driving. [OAR-2009-0472-7480, p.2]

EPA Response:

Although CARB supported EPA's use of a 10 percent rebound effect, CARB stated that 10 percent represented the upper bound for the rebound effect. CARB, Missouri DNR, and ICCT all suggested that EPA should consider a rebound effect that is lower than 10 percent. All three commentors referenced the recent work by Small & Van Dender as justification for using a lower rebound effect. The Small & Van Dender methodology estimates a dynamic rebound effect that varies over time, taking into account expected future changes in factors such as income, fuel prices, and urbanization. Based on these variables, the Small & Van Dender methodology projects that the rebound effect will decline significantly over time. The hypothesis that the rebound effect is declining over time is also supported by recent work by Dr. David Greene. See TSD Chapter 4 for additional details on these studies.

EPA agrees with the commenters that the most recently published literature supports a lower rebound effect, which is one of the reasons we have a adopted a value of 10 percent, which is lower than the 15 percent used by NHTSA in its previous rulemaking. While EPA appreciates the input provided by commenters, we did not receive any new data or analysis to justify revising our initial estimates of the rebound effect at this time. Based on the positive comments we received, we will continue using the dynamic rebound effect to help inform our estimate of the rebound effect in future rulemakings. However, given the relatively new nature of this analytical approach, EPA believes the larger body of historical studies should also be considered when determining the value of the rebound effect. As we described in the Chapter 4 of the joint Technical Support Document, the more recent literature suggests that the rebound effect is 10% or lower, whereas the larger body of historical studies suggests a higher rebound effect. Therefore, we will continue to use the 10% rebound effect for this rulemaking. However, we plan to update our estimate of the rebound effect in future rulemakings to further consider the newer work of Small and Van Dender and David Greene.

EPA also appreciates ICCT's comments discouraging the use of the short run elasticity of demand for gasoline with respect to price as a proxy for the rebound effect. Based in part on these comments, we have not used this metric as a replacement for the estimates of the rebound effect.

Organization: Hyde, James

Comment:

Rebound Effect: The proposal assumes a 10% rebound effect. The increased VMT attributed to this rebound is sufficient to offset the pollutant decreases derived from the reduced production and distribution of fuels. The discussions of the upstream and downstream emissions highlights some shortcoming of the available data and models to

compute impacts. The assumption that the 'rebound effect' 'continues throughout the life of the vehicle' [DRIA, pS17] is unfounded. If these is a 'rebound effect' it is a psychological phenomenon which can last only as long as the original owner can remain aware of the fuel economy change AND as long as the fuel economy change is not overwhelmed by increases in the cost per gallon or other expenses. Fuel cost is only one component, and not a large component, of the cost of operating a motor vehicle. [OAR-2009-0472-7258.1, p. 1]

EPA Response:

While the response of consumers to an increase in fuel economy may vary depending on the individual, this analysis of the rebound effect generally relies on aggregate changes in VMT based on historical national or state-level data. Many historical studies have shown a correlation between changes in total VMT and changes in fuel economy, even when other factors such as gasoline prices are taken into account. EPA agrees with the commenter that fuel costs are only one component of the full cost of driving. Therefore, EPA's analysis takes into account future projections of other factors such as income, fuel prices, and congestion when estimating the potential future rebound effect.

4.5.9 Benefits from Increased Vehicle Use

No comments were received on the benefits from increased vehicle use.

4.5.10. The Value of Increased Driving Range

Organization: Washington State Department of Commerce

Comment:

[Following comments are from LA Testimony, OAR-2009-0472-7283, p.125]

We urge, however, EPA and NHTSA to include two additional costs related to the reduction in driving costs brought about by increased standards: A, the increase in per-mile fuel consumption resulting from driving in heavier traffic conditions, which is partly a consequence of the rebound effect; and, B, the increase in urban sprawl by incentivizing low-density urbanization, partly a root of the rebound effect.

The latter is particularly important as it counters efforts to reduce VMT and may contribute to the carbon impacts of land-use change from new urban developments

EPA Response:

In both proposal and final rule, EPA included the cost of increased congestion-related delays in its analysis of the program. As discussed in Section II.F of the preamble, and Chapter 4.2.10 of the Joint TSD, this cost is approximately $0.05 per rebound mile. The agency did not account for a potential partial offset of the real world GHG benefits due to

altered drive cycles (increased delay due to increased congestion). We believe these potential losses to be minimal.

Any reduction in the cost of intra-urban travel (whether by auto, transit, or any other mode) provides some incentive for households and businesses to locate farther from their workplaces and other frequently-visited destinations (in the case of households), or farther from sources of raw materials, labor, and final markets (in the case of businesses). In comparison to the effects of infrastructure investment and financing decisions, together with pricing policies (indirect pricing of highway use through fuel taxes, and heavily-subsidized transit fares), the effect of making vehicles more fuel-efficient and thus less costly to operate on the cost of urban travel is likely to be trivial. This effect is unlikely to offset more than a small fraction of benefits from reducing fuel consumption.

The relationship between vehicle CO_2 standards, fuel economy, travel patterns, and land use change is a complex and emerging science. The agency may evaluate this relationship further in future rulemakings.

4.6. Safety and Mass Reduction

Organization: US Steel Corporation

Comment:

The economic impact of the proposed new CAFE rules will be affected by at least two competing factors. Initial response to the new regulation by automakers will change the mix of vehicles, typically growing the smaller and lighter C-segment and, perhaps, B-segment vehicles in place of more standard or larger-footprint cars and trucks. Smaller vehicles use less steel, and the reduction in demand for automotive steel could have a negative effect on the health of the North American steel industry. Also, the tendency to assign more expensive lower density materials to satisfy the regulation could exacerbate the harm. Smaller vehicles reduce steel demand, steel jobs, and the profitability necessary for steel companies to continue to invest in new products and new process technology. Additionally, a CAFE law focused only on use phase fuel economy invites consideration of low density materials that will lessen the demand for automotive steels and reduce the profitability of automotive steelmakers. [OAR-2009-0472-7197.1, pp.6-7]

Much has been written about the impact of vehicle size and weight on passenger injury severity. Recent summary data suggest that the daily toll on worldwide roadways is 3,000 deaths and 30,000 serious injuries. Because of technological advancement in vehicle engineering, including optimized crumple zones, rigid passenger compartments, strengthened side structures, air bags, electronic stability control, antilock brakes and so forth, the historical relationship between vehicle size, weight, and collision severity may be certainly influenced by design and structural improvements over time. Efforts to standardize bumper heights to prevent large vehicles from overriding smaller passenger cars in collisions are also important.

In spite of all these advances designed to protect occupants, it is clear that large, heavy vehicles are preferred to smaller ones in head-to-head collisions. Work by Desapriya and others have demonstrated that occupants in passenger sedans are more than two times likely to be injured than drivers or passengers in larger pickup trucks and SUVs. Resent testing conducted by the Insurance Institute of Highway Safety (IIHS) concluded that in head on collisions between small and large cars, the small car sustains significantly more damage, even though it has been rated as "Good" in the standard IIHS testing. The new NPRM, because of its schedule, assures that car makers will be manufacturing smaller, lighter vehicles in order to comply. This is likely to occur while significant large volumes of heavy trucks and SUVs are still on the road. There is a high probability that the rate of serious injury will increase because of the increase in the proportion of smaller vehicles and the higher probability that smaller cars will collide with the larger vehicles.

U. S. Steel research with the Auto/Steel Partnership and in programs supported by the U. S Department of Energy, that the use of new AHSS steel grades can enable the mass of critical crash structures, such as front rails and bumper systems, to be reduced in weight by 25 percent. Such vehicle structures with reduced mass can perform as well as their heavier counterparts in standard NHTSA frontal or IIHS offset instrumented crash tests. However these tests do not address relative vehicle size, hence in spite of these accomplishments with high-strength steels, it is unlikely that the "vehicle footprint" formula will totally negate the disadvantage that drivers of smaller vehicles have in collisions with heavier vehicles like pickup trucks and SUVs.

U. S. Steel believes that more time is needed to allow powertrain development to occur in order to achieve the targeted higher fuel economy. The development of electrification in powertrains (like in battery-electric vehicles or plug-in hybrids), more efficient internal combustion engines, and alternative energy sources (such as biofuels or hydrogen) requires time. The extension of the CAFE timetable to pace the required fuel economy targets according to technological capability of carmakers will prevent a rush to smaller vehicles that are less safe on roadways also populated by vehicles twice their mass or more. [OAR-2009-0472-7197.1, pp.7-8]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 97-102.]]

The core of my message today is that steel can play an important role in reducing the energy consumption and CO2 emissions in all phases of a vehicle's life, the manufacturing phase, driving phase, and end-of-life recovery. Over the past few decades working with our automotive customers I have seen a remarkable evolution of both the materials we supply and their application that have positively impacted the vehicle and meeting the NHTSA and EPA regulations. Historically the focus of CAFE regulations has been the use of the driving phase of the automobile. Fuel has been and will remain important to automakers' efforts to improve fuel economy. Steel's role is to enable mass production while maintaining safety and affordability. Today steel is the dominant material in the vehicle in the United States and around the world representing 60 percent of the vehicle material content. We have maintained that dominance for the last 100

years of the vehicle. However, it's not been the same steel. In the 60s and 70s we replaced cold walled steels that rust with zinc coated steels, in the 80s and 90s, replaced mild steels with high-strength steels. This decade we are replacing the high-strength steels with lightweighting advanced high- strength steels, and a decade from now we will be replacing those steels with new advanced lightweighting products. Today the advanced high-strength steels are the fastest growing material in vehicle designs -- whereas in 1999 there were nearly no applications of advanced high-strength steels, today they represent 15 percent of the vehicle steel content. Each and every new vehicle launch increases the content of these grades with the vehicle makers expected to reach 50 percent within the next decade. Our customers' demand for these products is a result of their lightweighting capability that enable affordable designs within their existing manufacturing facilities.

The need for these materials has come to result in the increase in crash requirements which have changed the vehicle structure from a stiffness-dominated design to a strength-dominated design. Strength is where steel performs better than any other automotive material. Advanced high-strength steels are four, five, and six times stronger than the steels that they are replacing. What has this meant to lightweighting of the vehicle? Material lightweighting is a function of design flexibility, strength, and density. What steel lacks in low density relative to competing materials, it more than compensates for with strength and design flexibility. To demonstrate that capability, the steel industry has invested in many projects demonstrating 25 to 30 percent mass reduction. We have worked with our customers to incorporate that technology in each and every new vehicle being launched today. These new vehicle structures are twice as strong as previous designs with mass reductions in excess of 20 percent while meeting the increased crash requirements and maintaining affordability.

And, remember, this technology is not yet fully integrated. Advanced high-strength steel content will increase from 15 percent today to 50 percent in the next decade, enabling additional mass savings on future vehicles.

Clearly steel is and will continue to play a role in reducing the energy used in CO2 emissions of the vehicle in its driving phase.

However, as I mentioned at the outset, steel can also play an important role in reducing the energy use in CO2 emissions in the other phases of a vehicle's life, in particular, the manufacturing phase, and end-of-life recovery.

EPA and NHTSA have an important opportunity to use this rulemaking to formulate policy guidance that best encompasses the entire environmental impact associated with the vehicle, and, consequently, encourages vehicle manufacturers to choose the materials that result in the lowest environmental impact over the entire vehicle life. The advanced high-strength steels energy, and CO2 intensity is the same as conventional steels. So in the manufacturing phase, a 25 to 30 percent mass reduction enabled by these materials means we produce 25, 30 percent less steel for each vehicle, with the accompanying reduction in raw material use, energy use, and CO2 emissions. This mass reduction then

improves fuel economy reducing energy use and CO2 emissions in the driving phase. Then at the end of a vehicle's life, 100 percent of the vehicle is recycled back in the very same steel products or future steel products for the next generation of vehicles.

In contrast, the low-density competing metals such as aluminum or magnesium have a much different story. On a per-pound basis, the energy and CO2 intensities of these materials are 7 to 18 times more than steel, resulting in a corresponding increase in the vehicle's manufacturing energy and CO2 intensity. These materials may provide a mass advantage. Unfortunately, what is gained in fuel economy in the driving phase through the weight reduction can be easily overcome by the selection of high-energy, CO2-intensive, low-density materials. And this concept goes beyond material selection. It applies to many technology options that may perform well within the envelope of regulated tailpipe emissions, but perform poorly when that boundary is expanded to address the total life cycle. To address these unintended consequences, a life cycle assessment approach is needed that considers all the phases of a vehicle's life.

EPA Response:

As stated in several places in the rule, the footprint curves established by NHTSA and EPA are designed to minimize the incentive for reducing vehicle size to meet stringency. EPA recognizes that based on economic and consumer demand factors that are external to this rule, the distribution of footprints in the future may be different (either smaller or larger) than what is projected in this rule. However, the agencies continue to believe that there will not be significant shifts in this distribution as a direct consequence of this rule.

With regard to mass reduction and the propensity of manufacturers to apply more expensive, lower density materials: EPA has partially based its position on information provided by AISI that the mass of a vehicle may be reduced through the application of High Strength (HSS) and Advanced High Strength Steels (AHSS). In AISI's comments, they noted that the mass of certain structures could be reduced by 25% through the application of AHSS. Given the magnitude of the mass reduction anticipated in support of this rule, the majority of the mass reduction could and most likely will be accomplished through additional applications of HSS and AHSS. These premium steel products are also more expensive than mild steel at a given weight. As a result, even though the application requires less steel by weight, the end product could be profit neutral to the steel companies.

During the Public Hearing, U.S. Steel commented that new vehicle structures incorporating high-strength steel would twice as strong as previous designs and were capable reducing mass by 20 percent while still meeting increased crash safety requirements and maintaining affordability. This appears to contradict their written comments that heavy vehicles would always be preferable to lighter vehicles in frontal collisions. The written comments also appear to ignore the fatalities in lighter vehicles struck by heavy vehicles. The 2010 Kahane Report,[i] 2005 DRI studies[ii,iii] and 2006 work by Robertson[iv] indicate that reducing the mass of the heaviest light-duty trucks can result in an overall reduction of fatalities due to reduced fatalities in lighter vehicles struck by

light-duty trucks. The results from EPA's modeling also show a higher mass reduction is expected for larger vehicles and as such should help to alleviate the in vehicle weight disparity and crash incompatibility in small vs. large vehicles. See RIA chapter 7.6.1 and RIA chapter 4.7 table 4-14.

Organization: Spurgeon, C. M.
Shaw, Donald F.
Wood, J.S.

Comment:

Lastly, we care about our families' safety as much as the Secret Service cares about the President's safety. There is a clear correlation between size and weight of a vehicle and its safety. That is why the President's limo only gets a reported 8 mpg, not 35 mpg. The Secret Service should not have to cut corners in keeping the President safe, just as we should not have to cut corners to keep our families safe. [OAR-2009-0472-7092.1, p. 2]

The safety of vehicles meeting this requirement will be significantly reduced with increased deaths and injury. [OAR-2009-0472-7270.1, p. 1]

Lastly, we care about our families. There is a clear correlation between size and weight of a vehicle and its safety. That is why the President's limo only gets a reported 8 mpg, not 35 mpg. The Secret Service should not have to cut corners in keeping the President safe, just as we should not have to cut corners to keep our families safe. [OAR-2009-0472-7270.1, p. 3]

EPA Response:

In the proposed rule EPA made reference to two major studies on the effects of vehicle mass and fatalities. The first was an analysis completed in 2003 by NHTSA which determined that vehicle fatalities increased with a reduction in curb weight. The second analysis was performed by Dynamics Research Incorporated (DRI) and determined that there were other factors involved other than just the curb weight of the vehicle. Specifically, they determined that a reduction in curb weight without a reduction in a vehicle's footprint will improve a vehicle's ability to avoid a crash, improve the survivability in the impacted vehicle, and reduce fatalities in rollovers. The EPA has studied these reports as well as input from automotive manufacturers, material suppliers, and government laboratories and believes that mass can be removed from a vehicle without adversely affecting safety. In fact, mass reduction techniques have already been employed in most, if not all, light duty vehicles to meet current FMVSS regulations and increase feature content.

The 2010 Kahane Report, 2005 DRI studies and 2006 work by Robertson indicate that reducing the mass of the heaviest light-duty trucks can result in an overall reduction of fatalities due to reduced fatalities in lighter vehicles by struck by light-duty trucks. The results from EPA's modeling of how vehicle manufacturers may respond to GHG

regulations also show a higher mass reduction is expected for larger vehicles and as such should help to alleviate the in-vehicle weight disparity and crash incompatibility in small vs. large vehicles.

With regard to specific comments about the Presidential limousine, this vehicle was reportedly built using a GMC Topkick/Chevrolet Kodiak heavy-duty truck platform[v], which is rated at 19,500 lbs. GVWR and thus is classified as a heavy-duty vehicle. This final rule only applies to passenger cars and light-duty trucks (<8,500 lbs. GVWR) and thus does not include heavy-duty vehicles. The regulation also does not specifically mandate any changes in vehicle mass, although it is likely that small reductions in vehicle mass that maintain safety will occur as detailed in EPA's regulatory impact analysis due to the cost effectiveness of curb weight reductions of less than 10% in reducing CO_2.

Organization: State of Connecticut Department of Environmental Protection

Comment:

DEP is not expert in the economic analysis of safety considerations that influenced the development of the proposed CAFE and GHG emission standards. We note, however, differing conclusions reached by EPA and NHTSA on safety issues. DEP requests that EPA and NHTSA work to resolve these differences using the latest science, most recent available data and a forward looking approach that balances the safety interests of drivers and passengers with the protection of public health and the environment for all. [OAR-2009-0472-7301, p.2]

EPA Response:

The Connecticut Department of Environmental Protection is correct in their assessment of the respective positions of NHTSA and EPA regarding mass reduction and safety in the NPRM. The two agencies are working closely to resolve these differences with the understanding that we both hold public safety in the highest regard. The agencies discussion is focused on not only the historical analyses, but also the engineeing and science behind vehicular safety as it relates to mass reduction. For the final rule, EPA and NHTSA have added a joint section on safety within section II of the final preamble.

Organization: Competitive Enterprise Institute

Comment:

Fuel economy mandates lead to reductions in vehicle size and weight.

Downsizing, however, has a direct negative impact on vehicle crashworthiness. In general, there is a positive correlation between vehicle size and safety, and between vehicle weight and safety. Fuel economy, on the other hand, is negatively correlated with size and weight. For this reason, there is a clear tension between crashworthiness and efforts to improve fuel economy. Given the direct connection between fuel economy and

CO2 emissions, EPA's proposed rule raises this very same safety problem. [OAR-2009-0472-7281.1, p.4]

New technologies and "attribute-based" regulation will not eliminate the safety trade-off.

Although EPA acknowledges that CAFE regulation in the past has diminished auto safety by decreasing vehicle mass, EPA assures us that this time things will be different, because the GHG standards will not lead to downsizing. Under the Energy Independence and Security Act (EISA), enacted in 2007, fuel economy targets vary according to a vehicle's "footprint" (the area formed by multiplying the wheelbase by the vehicle's track width). NHTSA and EPA have "carefully chosen" the "footprint curve (or function)" so that it "neither encourages manufacturers to increase nor decrease the footprint of their fleet." Consequently, says EPA, automakers will have no incentive to reduce a vehicle's "crush and crumple zones." Yet on the very same page, EPA acknowledges that, "EPA's modeling projects that vehicle manufacturers will reduce the weight of their vehicles by 4% on average between 2011 and 2016 although individual vehicles may have a greater or smaller weight reduction..."

In short, the average vehicle will have less mass to absorb collision forces than would be the case absent the rule. On average, each vehicle will be less safe than it would otherwise be. Despite being "attribute-based," the rule will limit production of heavier, safer vehicles. Consumers will not be able to buy all the safety they are willing to pay for. [OAR-2009-0472-7281.1, p.5]

EPA Response:

The Competitive Enterprise Institute (CEI), in their comments to the proposed rule, stated that vehicle downsizing and weight reduction, while being effective at reducing fuel consumption, will reduce the safety of vehicles. The two terms, downsizing and weight reduction, are used somewhat interchangeably in their comments when in fact these are two distinct attributes which must be addressed separately.

In an effort to discourage and otherwise eliminate incentives to downsize vehicles to meet the standards, NHTSA and EPA have created a footprint based attribute curve as the form of the standards. CEI was incorrect in their statement that the Energy Independence and Security Act (EISA) enacted a footprint based strategy. EISA mandates that the stringency be controlled by a vehicle attribute. NHTSA and EPA chose footprint as that attribute. EPA believes that the slope of the footprint attribute standard has been designed to minimize the incentive for manufacturers to make smaller vehicles (minimizing any regulatory benefit from downsizing by flattening the curve only for the smallest vehicles of 41 sq. ft. and lower footprint). In this effort the agencies feel they have been successful in addressing vehicle downsizing concerns. EPA recognizes that based on economic and consumer demand factors that are external to this rule, the distribution of footprints in the future may be different (either smaller or larger) than what is projected in this rule. However, the agencies continue to believe that there will not be significant shifts in this distribution as a direct consequence of this rule.

Weight reduction as a cost effective means of improving fuel economy and reducing CO2 emissions has been adopted by both NHTSA and EPA in their projections of technologies which could be utilized in a cost-effective manner to meet the standards. While the agencies differ slightly in their application of mass reduction, both agencies believe that it may be accomplished without sacrificing vehicle safety. Mass reduction can be accomplished through several mechanisms without changing a vehicle's impact performance and/or size. They include: Material Substitution, where a lower density material replaces a higher density material; Smart Design, which consists of optimizing designs to minimize mass and/or combining functions of co-located components; and finally, Mass Compounding which allows for resizing ancillary systems that are directly dependent on vehicle mass, such as brakes and suspension components.

Organization: University of Pennsylvania, Environmental Law Project

Comment:

While a number of studies have found that smaller vehicles are less safe for their occupants, many researchers have called this conclusion into question. The evidence indicates, instead, that disparities in vehicles size are likely to lead to injuries. Further, there is strong evidence that larger vehicles such as SUVs and light trucks impose significant safety risks on the drivers of other cars. Thus, despite claims that safety is served by maintaining vehicle size, the evidence is, at best, ambiguous on this point. Given evidence that larger vehicles impose high safety risks on non-occupants, and that large size disparities create the greatest risks, there is significant reason to question the disparate efficiency and emissions standards imposed on large and small vehicles. While there are clear reasons to maintain the market's role in providing consumers with choices, there are also clear reasons why the regulations propagated by EPA and NHTSA should not greatly encourage the manufacture of larger vehicles, which both impose greater safety risks and emit more greenhouse gases. [OAR-2009-0472-7286.1, pp. 16-17]

EPA Response:

EPA agrees with the University of Pennsylvania Environmental Law Project's comments regarding the rule's effect on vehicle safety. The rule is specifically designed to create no incentive to produce either larger or smaller vehicles. The results from EPA's modeling show a higher mass reduction is expected for larger vehicles and as such should help to alleviate the disparity in vehicle weight in small vs. large vehicles.

Organization: American Iron and Steel Institute

Comment:

Further, in Section III-f-4 (Weight Reduction and Potential Safety Impacts), p. 49589-49590, Federal Register) and in the recently released Draft Regulation Impact Analysis (DRIA), Section 3.2.1.2, there is discussion about weight reduction (mass reduction) as a

technology that supports fuel economy. Regarding the methodology, the document states 'A footprint attribute also would not discourage the use of lightweight materials, as a lighter vehicle with no change in footprint would more easily comply with its CO2 target'. The proposed rule documents identify two paths to the achievement of materials-based mass reduction, one based on the use of low density materials and the second based on the use of high-strength materials like high-strength steels in place of mild steel grades. AISI supports this classification and considers both approaches equally viable to increasing fuel economy for a carmaker within the proposed standard. However, if mass reduction is achieved through materials substitution of certain 'lower density materials' the total life cycle energy use and OHO emissions may not be equivalent to reducing mass (vehicle weight) with high-strength steels. This is of significant concern if the EPA/NHTSA objective is to reduce the total energy use and OHO footprint of the automotive fleet. [OAR-2009-0472-7088.1, p.4]

By using conventional high-strength steels (HSS), advanced high strength steels (AHSS), and ultra-high-strength steels (UHSS) together with modem structural computer-aided design and engineering (CAD, CAE), mass reductions of over 25 % have been realized both in research studies and in actual applications. The use of HSS and AHSS simply reduces the amount of steel required to do the same job in the vehicle. This mass reduction achieved by using steel more efficiently benefits fuel economy (driving cycle emissions reduction) equivalent to the mass reduction accomplished by application of a lower density material (such as aluminum, composites, or magnesium). However, the substitution of low-density materials can lead to increases in the energy and greenhouse gas emissions associated with manufacturing such materials. Comparative charts of the greenhouse gas emissions and the energy associated with making specific automotive materials are shown in Figures 3a and 3b, respectively. Here it is easily seen that alternative structural materials considered as possible substitutes for steel can produce 6 to 17 times the GHG emissions and consume 8 to 15 more energy as steel while achieving mass reduction in a vehicle. Unfortunately, what is gained in fuel economy in the driving phase of the vehicle life through weight reduction can be easily lost by selection of such high-energy, GHG-intensive, low-density materials. [OAR-2009-0472-7088.1, pp.4-5]

Much has been written about the impact of vehicle size and weight on passenger injury severity. Recent summary data suggest that the daily toll on worldwide roadways is 3,000 deaths and 30,000 serious injuries. Because of technological advancements in vehicle engineering, including optimized crumple zones, rigid passenger compartments, strengthened side structures, air bags, electronic stability control, antilock brakes and so forth, the historical relationship between vehicle size, weight, and collision severity may be influenced by design and structural improvements over time. Efforts to standardize bumper heights to prevent large vehicles from overriding smaller passenger cars in collisions are also important. [OAR-2009-0472-7088.1, pp.7-8]

In spite of all these advances designed to protect occupants, it is clear that large, heavy vehicles are preferred to smaller ones in head-to-head collisions. Work by Desapriya and others have demonstrated that occupants in passenger sedans are more than two times

likely to be injured than drivers or passengers in larger pickup trucks and SUVs. Resent testing conducted by the Insurance Institute for Highway Safety (IIHS) concluded in head-on collisions between small and large cars, small cars sustained significantly more damage, despite a 'Good' in the standard IIHS testing [which really only tests a vehicle against standard barriers and not against larger vehicles]. [OAR-2009-0472-7088.1, p.8]

The aggressive schedule for implementing the proposed rule assures that carmakers will be manufacturing smaller, lighter vehicles in order to comply. This is likely to occur while a high percentage of heavier SUVs and light trucks are still on the road. We believe there is a high probability the rate of serious injury will increase because of the increase in the percentage of smaller vehicles and the higher probability that smaller cars will collide with the larger vehicles. [OAR-2009-0472-7088.1, p.8]

AISI has shown in its research with the Auto/Steel Partnership and in programs supported by the U. S Department of Energy, the use of new AHSS steel grades can enable the mass of critical crash structures, such as front rails and bumper systems, to be reduced by 25 percent. Such vehicle structures with reduced mass can perform as well as their heavier counterparts in standard NHTSA frontal or IIHS offset instrumented crash tests. However these tests do not address relative vehicle size, hence in spite of these accomplishments with high-strength steels, it is unlikely that the 'vehicle footprint' formula will totally negate the disadvantage drivers of smaller vehicles have in collisions with trucks and SUVs. [OAR-2009-0472-7088.1, p.8]

AISI believes more time is needed to allow powertrain development to occur to help achieve higher fuel economy. The development of electrification in powertrains (such as in battery-electric vehicles or plug-in hybrids), more efficient internal combustion engines, and alternative energy sources [biofuels and hydrogen] will take time. Matching the compliance timetable for this rule to technological capability of carmakers will prevent a rush to smaller vehicles that are less safe on roadways also populated by vehicles twice their mass or more. [OAR-2009-0472-7088.1, p.8]

EPA Response:

See also the earlier response to similar comments by U.S. Steel Corporation in this same RTC section. AISI also noted that: "*AISI has shown in its research with the Auto/Steel Partnership and in programs supported by the U.S. Department of Energy, the use of new (Advanced High Strength Steel) AHSS steel grades can enable mass of critical crash structures, such as front rails and bumper systems, to be reduced by 25 percent. Such vehicle structures with reduced mass can perform as well as their heavier counterparts in standard NHTSA frontal or IIHS offset instrumented crash tests*." This is exactly the type of material substitution that EPA noted in the NPRM. In this case a vehicle can be made lighter without a concomitant decrease in crush and crumple zones.

On the other hand, AISI also commented that "*the aggressive schedule for implementing the proposed rule assures that carmakers will be manufacturing smaller, lighter vehicles in order to comply*". Porsche and IIHS had similar comments implying that footprint

standards will increase the risk that manufacturers will make vehicles smaller. In section II.C and III.D of the preamble to the final rule, the EPA describes in detail why we disagree with these statements. EPA believes that the slope of the footprint attribute standard has been designed to minimize the incentive for manufacturers to make smaller vehicles (minimizing any regulatory benefit from downsizing by flattening the curve only for vehicles with the small 41 sq. ft. and lower footprint). In this effort the agencies feel they have been successful in addressing vehicle downsizing concerns. EPA recognizes that based on economic and consumer demand factors that are external to this rule, the distribution of footprints in the future may be different (either smaller or larger) than what is projected in this rule. However, the agencies continue to believe that there will not be significant shifts in this distribution as a direct consequence of this rule. EPA believes that manufacturers will make vehicles lighter for increased fuel efficiency, but are not likely to reduce vehicle footprint to make them significantly smaller in response to the GHG standards contained in this final rule.

Organization: Dynamic Research, Inc

Comment:

The Proposed Rule contains a number of statements in its Section IIIF.4 with respect to DRI's research. A few of these statements contain misstatements or misinterpretations. The following text first quotes each such misstatement or misinterpretation and then presents DRI's comments on it. [OAR-2009-0472-7238.1, p.5]

1. "The DRI work focused on four major points…:

1. 2–Door vehicles represented a significant portion of the light duty fleet and should not be ignored;
2. Directional control and therefore crash avoidance improves with a reduction in curb weight;
3. The occupants of the impacted vehicle, or ''collision partner'' benefit from being impacted by a lighter vehicle;
4. Rollover fatalities are reduced by a reduction in curb weight due to lower centers of gravity and lower loads on the roof structures."

The four major points listed in Section III.F.4 of the Proposed Rule are only some of the points and conclusions in DRI's work. The DRI work focused on the effects of vehicle size and weight (i.e., curb weight, wheelbase, and track) on vehicle crash avoidance, crash-worthiness, and compatibility, based on accident and fatality data. There were numerous conclusions in addition to those listed, including the benefits of both increased size and reduced weight. [OAR-2009-0472-7238.1, pp.5-6]

For example, Tables 1 and 2 summarize the DRI results that for both the passenger car fleet and light truck and van fleet, weight reduction produces a statistically significant decrease in estimated fatalities, while track reduction results in a statistically significant increase in estimated fatalities. In addition, for the passenger car fleet, wheelbase

reduction also produces a statistically significant increase in fatalities. Overall these results indicate a consistent trend for both fleets. These trends are also consistent with the DRI results for the "1991-1998 4-door non-police passenger car only" fleet preferred by NHTSA, as shown subsequently in Table 4. It is unknown why NHTSA was unable to reproduce these results, however several possible reasons are discussed herein. [OAR-2009-0472-7238.1, p.6]

2. "Directional control and therefore crash avoidance improves with a reduction in curb weight."

This is an accurate but incomplete summary of one of DRI's conclusions. The empirical results in Table 3 of the 2005 DRI report indicated that crash avoidance improves with reduction in curb weight and/or with increases in wheelbase and track. The 2005 DRI also offered possible explanations for these results in Section III of the report, noting that "Crash avoidance can depend, amongst other factors, on the vehicle directional control and rollover characteristics." As just one example, wheelbase is a parameter in the quasi-steady vehicle directional equations of motion. These equations "indicate that passenger cars with shorter wheelbases tend to have smaller characteristic speeds, resulting in higher [yaw rate] natural frequency and less damping, based on analysis of quasi-steady vehicle equations-of-motion." Therefore, based on various theoretical models and empirical crash data, DRI concluded that "These results indicate that vehicle weight reduction tends to decrease fatalities, but vehicle wheelbase and track reduction tends to increase fatalities." [OAR-2009-0472-7238.1, p.8]

3. "…when DRI and NHTSA separately analyzed individual vehicle attributes of mass, wheelbase and track width, DRI and NHTSA obtained different results for passenger cars."

This is an accurate statement which warrants further explanation. The differences found may be due to the different assumptions about the linearity of the curb weight effect and control variables for driver age, vehicle age, road conditions, and other factors. NHTSA's analysis was based on a bi-linear model for curb weight with two different weight groups (less than 2950 lbs, and greater than or equal to 2950 lbs). The DRI analysis assumed a linear model for curb weight with a single weight group. The bi-linear model used by NHTSA may be over-parameterized because it has one additional curb weight coefficient to be estimated as well as a smaller curb weight range to estimate each curb weight coefficient, compared to the DRI analysis. NHTSA also used 8 different control variables for driver age instead of the three variables used in the 1997 NHTSA analysis and DRI analyses. It is also unclear what other control variables were used in the comparison to the DRI results. The control variables in the DRI analyses were originally those selected by Kahane. This bi-linear approach used by NHTSA approach and possible differences in the control variables could explain the 'widely differing results.' [OAR-2009-0472-7238.1, pp.8-9]

This difference between the NHTSA and DRI methods seems to be related to differences in the basic research question and related assumptions and the available data used. A

brief chronology of the NHTSA and DRI reports is listed in Table x, for reference. The objective of the DRI study was to estimate the first-order (i.e., linear) independent effects of vehicle curb weight, wheelbase, and track on safety (i.e., assuming that these effects are linear). The objective of the NHTSA study appears to be to estimate both the first-order and the second-order (i.e., non-linear) effects of curb weight (which was assumed to be a surrogate for both vehicle size and weight) on safety (i.e., assuming that the size and weight effects are fully correlated with each other and inseparable). In our opinion it is not possible to estimate both the first-order (i.e., linear) and the second-order (i.e., bi-linear) effects of vehicle curb weight, wheelbase, and track on safety, and at the same time to have both the first-order and second-order terms be statistically significant, given the available historical data. Therefore, the NHTSA objective appears to have been self-defeating from the start. [OAR-2009-0472-7238.1, pp.9-10]

EPA Response:

EPA acknowledges that the points listed in the preamble to the proposed rule, cited in the DRI comment, were not comprehensive, and were better interpreted as some of the major contrasts between Kahane's and DRI's methodology and results. The four points are as follows, with #1 and #4 discussed in greater detail below.

1. 2-Door vehicles represented a significant portion of the light duty fleet and should not be ignored.

2. Directional control and therefore crash avoidance improves with a reduction in curb weight and/or increases in wheel base and track.

3. The occupants of the impacted vehicle, or "collision partner" benefit from being impacted by a lighter vehicle.

4. Rollover fatalities are reduced by a reduction in curb weight due to potentially lower center of gravity and lower loads on the roof structures.

In addition to DRI's comments on EPA's results summary, DRI identified a clarification required for the second point (as it was stated in the NPRM). DRI commented that a decrease in wheel base or track could result in an increase in fatalities. DRI offered results from the application of the "quasi-steady vehicle directional equations of motion". These results show "that passenger cars with shorter wheelbases tend to have smaller characteristic speeds, resulting in higher [yaw rate] natural frequency and less damping, based on analysis of quasi-steady vehicle equations of motion". The EPA concurs with DRI's analysis and has adjusted point #2 accordingly in the discussion in section 7.6.1 in the final RIA.

Organization: Honda Motor Company

Comment:

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.96-103]

Safety and downsizing. Much has been written and researched about the impact of size, weight, and fuel economy regulation on safety.

As we have previously testified, Honda believes that size is a much better attribute than weight, and we believe that the argument over the safety differences between a size-based attribute and a weight-based attribute misses a larger point. The larger issue, it seems to us, is the need to downsize the fleet.

The size-based attribute introduced as an option in 2008 and mandatory from 2011 essentially reduces incentives to downsize from the current fleet mix. This means that the only way to improve fuel economy is through the application of technology and, therefore, higher costs.

In the previous regulation, consumers could downsize their vehicles and save money. Downsizing the fleet with an intelligent approach to safety has the salutary effect of greatly lowering the cost of greenhouse gas reductions. We believe that, as the fleet size and weight trend down, safety can be improved on a fleet-wide basis and efficiency can be improved at a lower overall cost to consumers.

Towards that end, the cap on passenger car requirements below 41 square feet, roughly the smallest 10 percent of the market, is an important step in the right direction. We recommend that a similar cap be set on the smallest 10 percent of the truck market as well.

Overall consideration should be given towards encouraging more fleet downsizing in order to promote safety and lower the cost of greenhouse gas reductions.

EPA Response:

The agencies acknowledge Honda's position in support of the footprint based attribute curve, and the relationship between vehicle size and safety. Both NHTSA and EPA offer this statement as corroborating and validating the agencies' goal of developing standards based on the footprint attribute in a manner which provides no encouragement or incentives to produce smaller vehicles as a compliance strategy.

4.7. Endangered Species Act

Organization: Center for Biological Diversity

Comment:

As noted in our previous comments on the DEIS, incorporated herein by reference, the agencies must also conduct an Endangered Species Act Section 7 consultation to fully inform their decision making prior to issuing final standards. [OAR-2009-0472-7265.1, p.

25] Previous comments submitted on the DEIS review Endangered Species Act requirements; assert that direct, indirect and cumulative emissions from regulated vehicles "may affect" listed species and that NHTSA must therefore initiate consultation under Section 7; refer to several listed species (including polar bears and listed coral species) and include an exhibit identifying 143 listed species for which a recovery plan has been adopted that references climate change or a projected impact of climate change as a threat to the species; and assert that the rule will impact species in ways beyond global warming and ocean acidification with a reference to vehicles as a primary source of excess nitrogen which contributes to several environmental issues. [NHTSA-2009-0059-0053.1, p. 9; NHTSA-2009-0059-0090.1]

EPA Response:

EPA has considered the commenter's reference to Endangered Species Act (ESA) Section 7 consultation as well as the separate comment addressing ESA issues submitted by the same commenter and others (which is incorporated by reference into this comment) on NHTSA's DEIS for their CAFE Standards. EPA has worked with NHTSA to assess ESA requirements and develop the agencies' responses to these comments. EPA notes that NHTSA's response to the comment submitted on its DEIS is found in Appendix G of its Final EIS. As set forth below, EPA adopts the reasoning of NHTSA's response as applied to EPA's rulemaking action.

ESA Section 7(a)(2)

Section 7(a)(2) of the ESA requires federal agencies, in consultation with the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) and/or the U.S. Fish and Wildlife Service (FWS, and, with NOAA Fisheries, the Services), to ensure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of federally-listed threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat of such species. 16 U.S.C. § 1536(a)(2). Under relevant implementing regulations, consultation is required only for actions that "may affect" listed species or critical habitat. 50 CFR § 402.14. Consultation is not required where the action has "no effect" on such listed species or critical habitat. Under this standard, it is the federal agency taking the action that evaluates the action and determines whether consultation is required. *See* 51 FR 19926, 19949 (June 3, 1986). The effects of the action are defined by regulation to include both the direct and indirect effects on species or critical habitat. 50 CFR § 402.02. Indirect effects are those that are caused by the action and are later in time, but still are reasonably certain to occur. Id.; Cf., 51 FR at 19932-19933 (discussing "reasonably certain to occur" in the context of cumulative effects analysis and noting that only matters that are likely to occur – and not speculative matters – are included within the standard).

Pursuant to Section 7(a)(2) of the ESA, EPA has considered the effects of its rule and has reviewed applicable ESA regulations, case law, and guidance to determine what, if any, impact there may be to listed species or designated critical habitat. EPA has considered issues relating to emissions of carbon dioxide (CO_2) and other greenhouse gases (GHGs)

as well as issues relating to emissions of non-GHG air pollutants. Based on this assessment, EPA has determined that the agency's rulemaking action, which, as described below, will generally result in emissions reductions from what would otherwise occur in the absence of the rule, does not require consultation with the Services under Section 7(a)(2) of the ESA.

Department of the Interior Views Regarding ESA Requirements and GHG Emissions

The FWS and Department of the Interior (DOI) have considered issues concerning ESA Section 7(a)(2) requirements in the context of federal agency actions relating to sources of GHG emissions on a number of occasions. In the context of the final listing of the polar bear as a threatened species under the ESA (73 FR 28212 (May 15, 2008)), FWS determined, with supporting analysis provided by the U.S. Geological Survey, that the best currently available scientific data do not support drawing a causal connection between GHG emissions from particular sources and effects on listed species or their habitats, for ESA purposes. In addition, FWS explained that it does not believe there is sufficient data to establish that any such impacts are reasonably certain to occur, for ESA purposes. Based on these conclusions, FWS determined that federal action agencies need not consult under Section 7(a)(2) of the ESA with respect to any such impacts.[15]

As FWS explained in the final polar bear listing:

> Formal consultation is required for proposed Federal actions that "may affect" a listed species, which requires an examination of whether the direct and indirect effects of a particular action meet this regulatory threshold. GHGs that are projected to be emitted from a facility would not, in and of themselves, trigger formal section 7 consultation for a particular licensure action unless it is established that such emissions constitute an "indirect effect" of the proposed action. To constitute an "indirect effect," the impact to the species must be later in time, must be caused by the proposed action, and must be "reasonably certain to occur" .... [T]he best scientific data available today are not sufficient to draw a causal connection between GHG emissions from a facility in the conterminous 48 States to effects posted to polar bears or their habitat in the Arctic, nor are there sufficient data to establish that such impacts are "reasonably certain to occur" to polar bears. Without sufficient data to establish the required causal connection – to the level of "reasonable certainty" – between a new facility's GHG emissions and impacts to polar bears, section 7 consultation would not be required to address impacts to polar bears.

[15] *See* Memorandum from H. Dale Hall, Director, U.S. Fish and Wildlife Service re: "Expectations for Consultation on Actions that Would Emit Greenhouse Gases" (May 14, 2008), Docket No. EPA-HQ-OAR-2009-0472-11676; Memorandum from Mark D. Myers, Director, U.S. Geological Survey re: "The Challenges of Linking Carbon Emissions, Atmospheric Greenhouse Gas Concentrations, Global Warming, and Consequential Impacts" (May 14, 2008), Docket No. EPA-HQ-OAR-2009-0472-11677.

73 FR at 28300. Subsequent to the final polar bear listing, DOI issued a Solicitor's Opinion explaining DOI's view that actions that involve the emission of GHGs do not meet the "may affect" threshold set forth in the ESA regulations and therefore do not trigger the consultation requirements of Section 7(a)(2) of the ESA.[16] The Solicitor's Opinion explains that, for purposes of the ESA "may affect" test, neither direct effects nor indirect effects would result from GHG emissions from particular sources. The Opinion concludes that where the effect at issue is climate change, proposed actions that involve the emission of GHGs cannot pass the "may affect" test and therefore are not subject to ESA consultation.

FWS also addressed this issue in finalizing a special rule to protect the polar bear under Section 4(d) of the ESA, 16 U.S.C. § 1533(d). 73 FR 76249, 76265-76266 (December 16, 2008). At that time, FWS again considered whether federal actions associated with GHG emissions require consultation under ESA Section 7(a)(2). As FWS stated:

> We have specifically considered whether a Federal action that produces GHG emissions is a "may affect" action that requires section 7 consultation with regard to any and all species that may be impacted by climate change. As described above, the regulatory analysis of indirect effects of the proposed action requires the determination that a causal linkage exists between the proposed action, the effect in question (climate change), and the listed species. There must be a traceable connection from one to the next, and the effect must be "reasonably certain to occur." This causation linkage narrows Section 7 consultation requirements to listed species in the "action area" rather than to all listed species. Without the requirement of a causal connection between the action under consultation and effects to species, literally every agency action that contributes greenhouse gases to the atmosphere would arguably result in consultation with respect to every listed species that may be affected by climate change. This would render the regulatory concept of "action area" meaningless. There is currently no way to determine how the emissions from a specific action both influence climate change and then subsequently affect specific listed species. As we now understand them, the best scientific data currently available do not draw a causal connection between GHG emissions resulting from a specific Federal action and effects on listed species or critical habitat by climate change.

73 FR at 76266. FWS also cited to the October 3, 2008, DOI Solicitor's Opinion confirming the conclusions that, given the current state of available science, a causal link cannot be made between GHG emissions associated with a proposed federal action and specific effects on a listed species. Id. FWS thus concluded that GHG emissions from such actions cannot pass the "may affect" test and are not subject to consultation under the ESA and its implementation regulations. Id.

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[16] *See* Memorandum from David Longly Bernhardt, Solicitor, U.S. Department of the Interior re: "Guidance on the Applicability of the Endangered Species Act's Consultation Requirements to Proposed Actions Involving the Emission of Greenhouse Gases" (Oct. 3, 2008), Docket No. EPA-HQ-OAR-2009-0472-11678.

The FWS' final rule under Section 4(d) became effective on January 15, 2009. Following the change in administration, FWS reviewed and retained the 4(d) rule without alteration. As FWS stated during that review:

> It is currently not possible to directly link the emission of greenhouse gases from a specific power plant, etc. to effects on specific bears or bear populations. This direct "connect the dots" standard is required under the Act and court rulings. Therefore, Fish and Wildlife Service's policy guidance to its field staff is not to require such consultations....Pending further review and analysis, the Department does not believe that a project-by-project ESA review of proposed actions that have the potential to increase greenhouse gas emissions, regardless of where they occur or how much they contribute to global greenhouse gas emissions, is the appropriate tool for addressing climate change impacts.

U.S. Department of the Interior, Polar Bear 4(d) rule – Q's and A's (May 8, 2009).[17]

Consistent with FWS' and DOI's guidance, EPA agrees that there must be a causal connection between a federal action and a potential effect on listed species or designated critical habitat for Section 7(a)(2) consultation requirements to apply, and that the potential effect must be reasonably certain to occur. EPA believes that any possible impacts on listed species or critical habitat of changes in GHG emissions associated the light duty motor vehicle rule fall within the analytical framework laid out in the polar bear documents and Solicitor's Opinion, in which FWS concluded that consultation under Section 7(a)(2) of the ESA was not required.

EPA's Prior Analysis of ESA Requirements and GHG Emissions

EPA has also previously considered issues relating to GHG emissions from stationary sources in connection with the requirements of ESA Section 7(a)(2). In correspondence to the Services, EPA has acknowledged that the legal and technical analysis undertaken by FWS and DOI concludes that Section 7(a)(2) consultation on single-source GHG emissions is not required due to an absence of causation and reasonably certain effects, for ESA purposes.[18] As an additional basis for considering Section 7(a)(2) obligations,

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[17] Available at: http://www.fws.gov/home/feature/2009/pdf/QandApolarbear4drule.pdf (last accessed Feb. 19, 2010). FWS has continued to consistently state this view of ESA requirements in connection with GHG emissions, including in its recent proposal of designated critical habitat for the polar bear. *See* 74 FR 56058, 56070 (Oct. 29, 2009) (stating that the underlying causes of climate change are complex global issues beyond the scope of the ESA); Polar Bear Proposed Critical Habitat Questions & Answers (reaffirming that the current state of the science is unable to connect a particular source of GHG emissions to effects on listed species or critical habitat). Available at: http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/PB%20PropCH.QsAs.Final.pdf (last accessed February 18, 2010).

[18] *See* Letter from Robert J. Meyers, Principal Deputy Assistant Administrator, Office of Air and Radiation re: "Endangered Species Act and GHG Emitting Activities (Oct. 3, 2008), Docket No. EPA-HQ-OAR-2009-0472-11679.

EPA also conducted a modeling analysis of single-source GHG emissions to assess the potential risk of harm to listed species – including the polar bear and listed coral species under NOAA Fisheries' jurisdiction. In light of EPA's considerable expertise in global climate change research and experience in utilizing available models to analyze GHG emissions, EPA believes that this prior analysis remains both relevant and instructive to our determination that the light duty motor vehicle rule is outside the scope of ESA consultation.

In this prior analysis, EPA noted that to date, research on how emissions of CO_2 and other GHGs influence global climate change and associated effects has focused on the overall impact of emissions from aggregate global sources. EPA also stated that the climate change research community has not yet developed tools specifically intended for evaluating or quantifying end-point impacts attributable to the emissions of GHGs from a single source, and that EPA was not aware of any scientific literature regarding the climate effects of individual, facility-level GHG emissions. Additionally, because the global and regional-scale models lack the capability to represent explicitly many important small-scale processes, EPA further noted that confidence in regional- and sub-regional-scale projections is lower than at the global scale. There is thus limited scientific capability in assessing, detecting, or measuring the relationship between single-source emissions of GHGs and any localized impact on a listed species, its habitat, or its members for ESA purposes. EPA affirmed that its understanding of the available modeling tools was consistent with statements made by the U.S. Geological Survey (*see* footnote 1 above) in the context of the polar bear listing (*i.e.,* that it is beyond the scope of existing science to identify a specific source of CO2 emissions and designate it as the cause of specific biological responses).

Notwithstanding the inherent uncertainties associated with modeling single-source emissions and localized regional or sub-regional end-point impacts, EPA analyzed the potential effect on temperature and tropical ocean pH of emissions from a hypothetical single source, which, as described in EPA's letter, was a substantially larger source of emissions than any actual facility then awaiting permitting action by EPA.[19] EPA's analysis projected at most only extremely small impacts on average global temperature and global atmospheric CO_2 concentrations over and beyond the anticipated functional lifetime of the hypothetical source. Although regional modeling and associated downscaling introduced untested approaches and additional uncertainties, EPA downscaled the projected global temperature changes to the Arctic and Caribbean regions in light of expected higher relative temperature increases at the poles. Ultimately, EPA concluded that any temperature and ocean acidification outputs from the modeled source would be extremely small, beyond physical measurement or detection in the habitat of listed corals or polar bears, and at a scale below any specific adverse temperature or

[19] For GHGs, EPA's analysis used emissions estimates of 14,132,586 metric tons per year of CO_2, 273.6 metric tons per year of nitrous oxide, and 136.8 metric tons per year of methane. With regard to non-GHG pollutants, the analysis used: Ozone (180.7 metric tons per year of volatile organic compounds); Carbon monoxide (6019 metric tons per year); Sulfur dioxide (3609 metric tons per year); and Nitrogen oxides (3018.5 metric tons for first five years, then 2326.2 annual metric tons for the remaining 45 years). In addition, EPA assumed that the model facility would have a useful life of approximately 50 years.

acidification effects identified in the scientific literature for those species. Because the principal climate model used in the analysis would be the first step in any similar assessment for any species, EPA determined that similar conclusions would also apply to other species and locations. EPA concluded:

> In these circumstances, and also in light of the uncertainties in attempting to use the models' outputs to predict impacts at a local level, EPA has determined that the risk of harm to any listed species, including the listed corals or polar bears, or to the habitat of such species based on the anticipated emissions of the model facility as described above, or any facility with lower emissions, is too uncertain and remote to trigger ESA section 7(a)(2) obligations. Section 7(a)(2)'s purpose of ensuring no likely jeopardy to listed species and no destruction or adverse modification of designated critical habitat is not implicated by such remote potential risks. *See, e.g., Ground Zero Center for Non-Violent Action v. U.S. Department of the Navy*, 383 F.3d 1082 (9th Cir. 2004) (where the likelihood of jeopardy to a species is extremely remote, consultation is not required). This reasoning is consistent with the conclusion reached by FWS and DOI that consultation under ESA section 7(a)(2) is not required for GHG emissions from a single source.[20]

EPA's ESA Analysis Re: GHGs

The comment states that EPA must conduct ESA Section 7 consultation on its rulemaking action. Among other things, the comment submitted on NHTSA's DEIS (which is incorporated by reference in the comment submitted on the rules) identifies 143 listed species for which, the comment asserts, "a recovery plan has been adopted that specifically identifies climate change or a projected impact of climate change as a direct or indirect threat to the species, as a critical impact to be mitigated, as a critical issue to be monitored, and/or as a component of the recovery criteria." See Docket No. NHTSA-2009-0059-0090.1. Although EPA agrees that climate change and related issues are relevant considerations in regard to the recovery of many species, including species listed under the ESA, EPA believes that, as applied to EPA's rulemaking, the comment generally misunderstands the effect of EPA's action, and misapplies ESA Section 7(a)(2)'s requirements.

For instance, the comment appears to attribute the entire volume of emissions from the regulated sector – including a reference at one point to "increased greenhouse gas emissions" – to the current actions. Id. EPA notes, however, that at present, there are no federal restrictions on GHG emissions from new light duty motor vehicles. In fact, EPA's light duty vehicle GHG rule, for the first time, adopts federal controls on those emissions. It does not license, issue permits for, or otherwise allow emissions to occur. Rather, the rule controls emissions of GHGs pursuant to, and subject to the requirements

[20] *See supra* footnote 4.

of, section 202(a)(1) of the Clean Air Act.[21] EPA has consequently analyzed the rule's impacts in terms of the GHG emission reductions achieved by the rule.[22] Because EPA's rule results in the reduction of GHG emissions from the regulated sector, the rule would reduce the severity of climate change as analyzed at a global scale and can, therefore, be expected to have a beneficial effect with respect to global climate change (and therefore could not have an adverse effect on listed species that are negatively affected by climate change). The comment presents no information and raises no issue with regard to these potential effects and ESA considerations.

EPA is also mindful of the significant legal and technical analysis undertaken by FWS and DOI as well as EPA's prior analysis regarding GHG emissions and the ESA. With regard to the light duty motor vehicle rule, EPA's analysis determined that the rule would reduce GHG emissions over the lifetime of MY2012-2016 passenger cars and light trucks in the amount of 962.0 million metric tons of CO_2 equivalent. RIA Table 5-3. Based on these reductions, EPA modeled the anticipated potential effect on climate change and found that in year 2100, the rule would reduce temperature increases by 0.006-0.015 degrees Celsius, and the reduction in sea-level rise would be 0.06-0.14 centimeters. EPA has also projected a reduction in CO_2 concentration of 2.9 parts per million in 2100, which corresponds to a projected ocean pH increase of 0.0014 units in 2100. See RIA chapter 7.4.2. Thus, EPA expects the agency's action would have a beneficial overall effect on temperature, sea level rise and ocean acidification by decreasing the severity of climate change and CO_2 concentration as assessed on a global scale. However, as described above in the prior analyses undertaken by FWS, DOI, and EPA, any efforts to translate these small global changes to effects in the specific habitats of any listed species or to effects on such species is problematic.

For instance, as noted above, EPA believes that changes in GHG emissions associated with the rule are within the framework of the FWS/DOI analysis, which concluded that Section 7(a)(2) consultation is not required due to the absence of a causal connection and reasonably certain effects on listed species. Although this rule involves GHG emissions reductions from mobile sources rather than from a single stationary source, EPA believes that FWS'/DOI's analysis regarding causation would be identical for the mobile sources regulated by the rule. In this regard, FWS'/DOI's analysis and conclusion that it is impossible, for ESA purposes, to trace a causal link between a single stationary source's GHG emissions and any reasonably certain effect on a specific species in a specific habitat would apply equally to the reductions of emissions from this rule relating to mobile sources. The commenter presents no information to the contrary.

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[21] That provision requires, for instance, that EPA's standards be premised on a finding of technological feasibility, taking costs into consideration, and that there be sufficient lead time "to permit the development and application of the requisite technology." See generally 74 FR at 49464-65. This means, among other things, that EPA cannot adopt such infeasible and cost-prohibitive measures as prohibiting all GHG emissions from the regulated vehicles. Nor can EPA's rule force the use of control technologies beyond the point of their availability, taking costs into account, during model years 2012-2016. The basis for the stringency of the standard is set out in section III.D of the preamble to the final rule.

[22] EPA analyzed impacts on criteria pollutants in the same manner. See Preamble section III.G.

In addition, as EPA has previously done in the context of stationary sources, EPA has considered the magnitude of change to GHG emissions resulting from implementation of the rule. As described above, notwithstanding uncertainties and novel model applications, EPA previously attempted to analyze the emissions of a single large stationary source with respect to impacts on temperature and tropical ocean pH. EPA's conclusion was that any such potential effects would be so small as to be beyond physical measurement or detection in the habitats of listed species and outside the scope of any potential effect on such species/habitat identified in the scientific literature that EPA reviewed. EPA has determined that the same conclusion applies to changes in GHG emissions associated with the light duty motor vehicle GHG rule. The commenter presents no information to the contrary.

EPA notes that the predicted changes in global mean temperature and oceanographic pH attributable to this rule are roughly one to one and one-half orders of magnitude greater than those evaluated by EPA in the October 3, 2008, Meyers letter, and are also directionally different – *i.e.*, improvements in climate-related effects rather than decrements. These slight differences in the climate signal do not change EPA's ultimate conclusion. The predicted effects remain directionally important, yet small and attenuated in time. EPA knows of no modeling tool which can link these small, time-attenuated changes in global metrics to particular effects on listed species in particular areas. Extrapolating from global metric to local effect with such small numbers, and accounting for further links in a causative chain, remain beyond current modeling capabilities. EPA has particularly evaluated the potential effect of the predicted improvement in oceanographic pH on listed corals, since the chain of causation between CO_2 concentration and corals is somewhat less indirect than chains of causation for other listed species (*e.g.*, climate effects on polar bears which, among other things, involve assessments of additional complex factors relating to the life history of the species and polar sea ice dynamics). Even in this instance, the predicted improvements in pH are so small that there is no evidence in the literature that there would be an effect on listed coral species. The commenter presents no information to the contrary.

Based on these results, and consistent with EPA's prior analysis and the *Ground Zero* decision noted above, EPA also believes that any potential for a specific impact to listed species in their habitats associated with these very small changes in average global temperature and ocean pH is too remote to trigger the threshold for ESA Section 7(a)(2) consultation.

EPA's Analysis Re: Other Air Pollutant Emissions

EPA has also carefully considered issues relating to changes in non-GHG emissions expected to result from implementation of the rule. As part of its rulemaking, EPA has estimated the total changes in national criteria and air toxic pollutant emissions annually to 2030. For most pollutants, there is a net decrease in emissions as the rule is implemented. For other pollutants, there are small emissions increases as the rule is implemented over time. For all of the non-GHG pollutants, the estimated national reductions – and, for a few pollutants, the estimated potential increases – are of extremely

small magnitudes (substantially smaller by several orders of magnitude than estimated reductions in GHG emissions). The following chart provides EPA's estimated changes for each of the non-GHG pollutants.

Impacts of Program on Non-GHG Emissions (Short Tons per year)

POLLUTANT	CALENDAR YEAR 2020	% CHANGE VS. 2020 REFERENCE	CALENDAR YEAR 2030	% CHANGE VS. 2030 REFERENCE
Δ 1,3-Butadiene	-95.1	-0.38%	-21.1	-0.10%
Δ Acetaldehyde	760.0	2.26%	668.1	2.18%
Δ Acrolein	0.8	0.01%	4.7	0.07%
Δ Benzene	-889.9	-0.48%	-523.1	-0.29%
Δ Carbon Monoxide	3,980.3	0.01%	170,648.6	0.56%
Δ Formaldehyde	-49.4	-0.06%	15.1	0.02%
Δ Oxides of Nitrogen	-5,916.1	-0.02%	-21,845.0	-0.07%
Δ Particulate Matter (below 2.5 micrometers)	-2,402.9	-0.03%	-4,574.8	-0.05%
Δ Oxides of Sulfur	-13,853.4	-0.42%	-27,492.8	-0.82%
Δ Volatile Organic Compounds	-60,305.4	-0.51%	-115,816.5	-1.02%

Source: RIA Table 5-2

EPA has carefully considered the potential effects of these pollutants and is unaware of information identifying any effects on listed species from such small fluctuations in pollutant amounts.[23] Further, EPA notes that the modeling tools available for EPA's regulatory analysis are not designed to trace fluctuations in ambient concentration levels to potential impacts on particular species. EPA believes that such models do not, therefore, attribute any biological response or impact on listed species to the ambient concentration changes with the degree of reasonable certainty required under the ESA. The commenter again has presented no information challenging this conclusion. For similar reasons as explained above regarding GHG emission changes, EPA thus believes that ESA consultation is not required with respect to non-GHG emission changes attributable to the light duty motor vehicle rule.

[23] Among other things, EPA's review included consideration of the information contained in the Integrated Science Assessments for both Particulate Matter and Ozone (*see* U.S. EPA 600/R-08/139F, "Integrated Science Assessment for Particulate Matter" (2009), Docket No. EPA-HQ-OAR-2009-0472-11295; US EPA, 600/R-05/004aF-cF "Air Quality Criteria for Ozone and Other Photochemical Oxidants" (2006), Docket Nos. EPA-HQ-OAR-2009-0472-0099, -0100, -0101). These documents are developed pursuant to section 108(a)(2) of the Clean Air Act, and "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public … welfare which may be expected from the presence of such pollutant in the ambient air."

[i] "Relationships Between Fatality Risk, Mass, and Footprint in Model Year 1991-1999 and Other Passenger Cars and LTVs," Charles J. Kahane, NCSA, NHTSA, March 2010, available within Docket NHTSA-2009-0059. We note that this report has not yet been externally peer-reviewed, but that NHTSA has begun the process for peer review in accordance with OMB guidance by the time of publication of this final rule. The results of the peer review and any subsequent revisions to the report will be made available in a public docket and on NHTSA's website as they are completed.
[ii] "Supplemental Results on the Independent Effects of Curb Weight, Wheelbase and Track on Fatality Risk", Dynamic Research, Inc., DRI-TR-05-01, May 2005.
[iii] "An Assessment of the Effects of Vehicle Weight and Size on Fatality Risk in 1985 to 1998 Model Year Passenger Cars and 1985 to 1997 Model Year Light Trucks and Vans", Van Auken, M., Zellner J.W., SAE Technical Paper Number 2005-01-1354, 2005.
[iv] "Blood and Oil: Vehicle Characteristics in Relation to Fatality Risk and Fuel Economy", L.S. Robertson, American Journal of Public Health, Vol. 96, No. 11, November 2006.
[v] "2009 Cadillac Presidential Limousine" David Gluckman, Car and Driver Magazine, January 2009.

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5. EPA Vehicle Program, Feasibility, and Estimated Impacts

5.1 Vehicle Categories and Test Procedures

5.1.1. Vehicle Categories

Organization: Ford Motor Company
Hyundai Motor Company
California Air Resources Board
National Association of Clean Air Agencies (NACAA)
National Automobile Dealers Association (NADA)
Toyota Motor North America

Comment:

Ford Motor Company

Ford supports the use of footprint-based standards with separate car and truck fleets based on NHTSA vehicle definitions for both the GHG and CAFE programs. Ford and the auto industry have long supported separate car and truck attribute-based standards because cars and trucks have different functional characteristics even if they have the same footprint. For example, the Edge and the Taurus have the same footprint (and base curb weights within 100 lbs), but significantly different towing capabilities. The Edge can tow up to 3500 lbs with the trailer tow package, but the Taurus can only tow 1000 lbs. Some of the key features incorporated on the Edge that enable the larger tow capability include an engine oil cooler, larger radiator, and updated cooling fans. This is one of many examples that show the functional difference between car and truck and further support the need to maintain separate car and truck attribute-based standards. [OAR-2009-0472-7082.1, p. 2]

Hyundai Motor Company

NHTSA is required by the Energy Independence and Security Act to maintain separate passenger car and truck CAFE compliance categories, but EPA has authority to implement a single fleet program. We would support a single fleet program, because it would provide greater compliance flexibility for manufacturers, while maintaining energy and environmental benefits.

Of course, for the two agencies to diverge on compliance categories would reduce the harmonization between the two programs. Thus, it would be optimal if the statutory inconsistencies could be resolved to allow a single national program with a single fleet. If statutory inconsistencies are not resolved, then harmonization between EPA and NHTSA programs should remain a priority. Regardless, any future changes to compliance categories and vehicle classifications within those categories should provide ample lead time prior to adoption. [OAR-2009-0472-7231.1, p.3]

California Air Resources Board

EPA requested comment on whether the proposed separate car and light truck standards are sufficient to avoid concerns over emission reductions that could be lost if vehicles are upsized. CARB supports separate greenhouse gas standards for passenger cars and light-duty trucks as proposed. As noted in the Joint Proposal, vehicle attributes such as load carrying and towing capacity differ between these two categories and, therefore, are appropriately addressed by separate fleet average requirements. [OAR-2009-0472-7189.1, p.10]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

National Association of Clean Air Agencies (NACAA)

Finally, in November 26, 2008 comments to EPA on the agency's Advance Notice of Proposed Rulemaking on regulating GHG emissions under the Clean Air Act, NACAA encouraged EPA to develop and enforce GHG standards for all key vehicle, engine and equipment subsectors within the overall transportation sector. We reiterate this recommendation now, especially with respect to onroad heavy-duty engines for which EPA should develop federal regulations without delay in close cooperation with the states. States are keenly aware of the pressing environmental need to garner GHG emissions reductions from onroad heavy-duty engines. In the absence of federal action, states will be pressed to move ahead using other authorities under the Clean Air Act so that emissions reductions from this sector can be achieved as soon as possible. [OAR-2009-0472-7071.1, p.4]

National Automobile Dealers Association (NADA):

The National Program should only apply to passenger cars and light trucks with a gross vehicle weight rating (GVWR) of up to 10,000 lb. (excepting large pick-up trucks and cargo vans ("work trucks") and certain vehicles manufactured in two or more stages). Existing definitions set out in 49 CFR Part 523 should be retained. EISA did not make, let alone suggest changes to existing vehicle classification definitions, least of all that certain SUVs and all minivans be reclassified as passenger cars". Moreover, for purposes of the National Program, EPA must harmonize its definitions to those set out in 49 CFR Part 523. [OAR-2009-0472-7182.1, p.9]

Toyota Motor North America:

As required by law, NHTSA proposes to set CAFE standards for three regulated fleets - domestically produced passenger vehicles (domestic cars), non-domestically produced passenger vehicles (import cars), and non-passenger vehicles (trucks) . Under NHTSA's CAFE proposal, the footprint-based attribute curve for both domestic cars and import cars in a given model year is based on a single maximum feasible target curve when considering the combined fleet of import and domestic cars . While there is but a single target curve established for cars each model year, compliance with the target curve must be calculated separately for import cars and domestic cars (in addition to a separate domestic car anti-backsliding standard). [OAR-2009-0472-7291, p.6]

EPA Response to Comments

Unlike NHTSA, EPA is not required by law to regulate vehicle GHGs or tailpipe CO2 using any predetermined vehicle fleets. As such, EPA proposes to regulate based on two vehicle fleets - cars and trucks. For the purpose of regulating GHGs, EPA also proposes to use the same regulatory definition for 'cars' and 'trucks' as used by NHTSA in the CAFE program, albeit without the distinction between import and domestic car for compliance calculations. [OAR-2009-0472-7291, p.6]

Toyota supports EPA's proposal to regulate based on two fleets (cars and trucks), as well as EPA's proposal to use the same definitions of 'car' and 'truck' as NHTSA. While EPA's proposal is not perfectly harmonized with NHTSA's three-fleet approach, both agencies are, in fact, setting just two sets of target curves - one for cars and one for trucks. The harmonization difference lies in the compliance calculations, and the fact that NHTSA is forced by statute to require separate calculations for import cars and domestic cars. Toyota supports EPA's use of two fleets for its program because it provides greater compliance flexibility for manufacturers without creating additional burden. [OAR-2009-0472-7291, pp.6-7]

EPA also requests comments on combining the entire fleet into a single compliance category, with a single target curve for the fleet each model year. If faced with just one federal program with which to comply, Toyota may not object to a combined fleet standard, since it would arguably provide manufacturer's with the greatest level of flexibility to comply and it would remove any concerns about vehicle classifications . However, due to the lack of harmonization with NHTSA's program that would result, and the inflexibility afforded NHTSA in the existing CAFE statute, Toyota would not support EPA setting a single target curve for the entire fleet of cars and trucks even though it would result in the greatest level of flexibility. [OAR-2009-0472-7291, p.7]

Concerning EPA's adoption of NHTSA's car and truck definitions for the purpose of vehicle GHG regulations, Toyota supports this approach in order to maintain harmonization and avoid complex bookkeeping requirements that would be needed in the absence of harmonized definitions. The issue of whether NHTSA (and by extension EPA) should revise the current definitions of cars and trucks for fuel economy and GHG regulation purposes is addressed later in these comments. [OAR-2009-0472-7291, p.7]

EPA Response:

In general there was widespread support for separate car and truck attribute-based standards based on harmonized definitions of car and truck between the EPA and NHTSA programs. Although Hyundai commented that "We would support a single fleet program, because it would provide greater compliance flexibility for manufacturers, while maintaining energy and environmental benefits," they acknowledged that there were statutory constraints that would prohibit a harmonized program based on a single fleet. Hyundai concluded that harmonization of the two programs was the first priority, and thus in the absence of statutory changes there should be separate but harmonized fleets.

As explained in section III.B.1 of the preamble to the proposed rule (74 FR at 49516/2), and reiterated in the preamble to the final rule and supported by many of the public comments, EPA

is not finalizing a single fleet standard. First, some vehicles classified as trucks (such as pick-up trucks) have certain attributes not common on cars which contribute to higher CO_2 emissions—notably high load carrying capability and/or high towing capability. Due to these differences, it is reasonable to separate the automobile fleet into two segments. Second, the segmentation of the automobile fleet is a key program design element of the GHG standards that EPA believes should be harmonized with NHTSA's CAFE program. NHTSA is required by statute to set separate standards for passenger cars and for non-passenger cars. Finally, because manufacturers are able to transfer credits between their car and truck fleets under both the NHTSA and EPA programs, most of the advantages raised by commenters of a single fleet standard for all automobiles are also present in the two-fleet program being finalized. Because EPA is allowing credit transfers between a manufacturer's car and truck fleets, the two fleets can effectively be viewed as a single fleet when manufacturers consider compliance strategies. The one benefit of a single light-duty fleet not captured by a two-fleet approach is that a single fleet prevents potential "gaming" of the car and truck definitions, whereby manufacturers might try to design vehicles most similar to passenger cars but which meet the regulatory definition of trucks. EPA does not believe at this time that concern is sufficient to outweigh the other reasons for separate car and truck fleet standards.

Consistent with the comment from NADA, EPA is finalizing as proposed the overall fleet covered by the standards, i.e., all vehicles up to 8500 pounds GVWR plus the limited category of passenger vehicles between 8500 and 10,000 pounds GVWR known as medium-duty passenger vehicles. These are the vehicles to which the current Tier 2 emission standards apply, and, starting with the 2011 model year, to which the CAFE program will apply (the CAFE program expands to cover the medium-duty passenger vehicles starting in the 2011 model year).

The National Association of Clean Air Agencies (NACAA) recommended that EPA regulate GHG emissions for all key engine and equipment subsections within the overall transportation sector, "especially for onroad heavy-duty engines for which EPA should develop federal regulations without delay in close cooperation with the states…..In the absence of federal action, states will be pressed to move ahead using other authorities under the Clean Air Act so that emissions reductions from this sector can be achieved as soon as possible."

On October 20, 1999, the International Center for Technology Assessment (ICTA) and 18 other environmental and renewable energy industry organizations filed with EPA a "Petition for Rulemaking and Collateral Relief Seeking the Regulation of Greenhouse Gas Emissions from New Motor Vehicles under Section 202 of the Clean Air Act." As discussed in the proposal (74 FR 49507, September 28, 2009), on April 2, 2007, the U.S. Supreme Court held in *Massachusetts v. EPA* that greenhouse gases were air pollutants under the Clean Air Act and remanded the case to the U.S. Court of Appeals for the District of Columbia Circuit for further action. Heavy-duty vehicles are among the vehicle classes addressed by the petition and it is likely that EPA will respond to the petition as part of a future rulemaking.

In addition, EISA added a new provision, 49 U.S.C. 32902 (k), requiring DOT, in consultation with DOE and EPA, to examine the fuel efficiency of commercial medium- and heavy-duty on-highway vehicles and work trucks and determine the appropriate test procedures and methodologies for measuring their fuel efficiency, as well as the appropriate metric for

measuring and expressing their fuel efficiency performance and the range of factors that affect their fuel efficiency. DOT is authorized to develop fuel economy standards for these vehicles as part of this effort. Work on addressing these requirements is on-going.

5.1.2. Test Procedures

Organization: Association of International Automobile Manufacturers (AIAM)
Manufacturers of Emission Controls Association
National Renewable Energy Laboratory
American Council for an Energy Efficient Economy
Sierra Club
Cummins Inc.
Fisker Automotive, Inc.
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
U.S. Coalition for Advanced Diesel Cars
Hyde, James

Comment:

Association of International Automobile Manufacturers (AIAM):

AIAM does not support fundamentally changing the fuel economy/greenhouse gas test procedures at this time. Our reluctance to support such changes is due to the impact that such changes could have on the effective stringency of the standards. Any future changes should be accompanied by offsetting changes in the stringency of the standards and should provide adequate lead-time for manufacturers to make necessary changes to test equipment and reflect the new procedures in their compliance plans. [OAR-2009-0472-7123.1, p.17]

It is necessary to have consistent and similar test procedures for battery electric vehicles, plug-in hybrids, and fuel cell vehicles. AIAM urges EPA to pursue the development of such test procedures in conjunction with the Society of Automotive Engineers. [OAR-2009-0472-7123.1, p.17]

[AIAM also submitted these comments as testimony at the Los Angeles public hearing. See docket LA EPA Hearing EPA-HQ-OAR-2009-0472-7283, pp. 28-32]

Manufacturers of Emission Controls Association:

MECA supports 5-cycle approach: MECA believes that any regulatory requirements associated with greenhouse gas emissions should be based on real-world driving or usage patterns in order to ensure that regulatory standards reflect actual vehicle operations and deliver the greenhouse gas emission reductions that are needed. [OAR-2009-0472-7108.2, p.6]

National Renewable Energy Laboratory:

In the alternate SCO3 test procedure, there is only a 10 minute soak with solar lamps. This is not a sufficient duration for thermal load reduction technologies to have a significant impact on interior temperatures. A longer thermal soak period with lamps is recommended. [OAR-2009-0472-4798.1, p.1]

Thermal preconditioning of the passenger compartment is being considered to reduce A/C fuel use in PHEVs and EVs. When using grid power, this strategy effectively reduces vehicle powered A/C usage and eliminates the cool down A/C fuel use. It is not clear if this strategy would be allowed under the proposed test procedure. It is recommended that the test procedure allow the use of cabin thermal preconditioning as a method to reduce A/C fuel use. [OAR-2009-0472-4798.1, p.1]

American Council for an Energy Efficient Economy:

EPA should take the opportunity offered by the new regulatory regime for GHGs to establish an emissions test that reflects real-world emissions to the extent possible. As EPA demonstrated in its rulemaking to update fuel economy labels, the best available estimate of real world fuel economy is some twenty percent lower on average than the CAFE value. The discrepancy between label values and CAFE values is a constant source of confusion to consumers and legislators, and may also constitute an obstacle to achieving fuel use and GHG emissions reductions in a timely fashion [OAR-2009-0472-7260.1, p.14]

While NHTSA cannot change fuel economy test procedures for cars without a change in law, this need not hinder EPA's adoption of realistic test methods. EPA and NHTSA standards could still be harmonized with the use in the near term of a "correction factor" to reconcile test differences, just as EPA has allowed manufacturers to generate label values on an interim basis through calculations using the outdated city and highway test values. [OAR-2009-0472-7260.1, pp.14-15]

Further work beyond that done for EPA's labeling rule may be warranted to produce a satisfactory vehicle testing protocol update. If this work cannot be completed before the light duty vehicle GHG rule is finalized, EPA should state in the rule a date certain, within the next few years, by which the switch to a more accurate testing protocol will be adopted. [OAR-2009-0472-7260.1, p.15]

Recommendation: Include in the final rule a statement that GHG emissions testing will be improved to represent real-world emissions and provide a date by which this improvement will occur. [OAR-2009-0472-7260.1, p.15]

Sierra Club:

Finally, the need for off-cycle credits highlights the inadequacy of current test procedures. Although the 5-cycle test is a much improved approach, compared to the FET and HFET, there is a clear need to update certification test procedures to account for all available technologies as well as current driving conditions and behaviors. Updating test procedures will allow for broader

integration of "off-cycle" technologies in future rounds of standards. We discuss updating certification test procedures later in our comments. [OAR-2009-0472-7278.1, p.15]

Cummins Inc.:

Cummins recommends that EPA and NHTSA adopt test procedures and methodology to measure fuel economy and GHG emissions that are more reflective of real-world conditions. This would ensure a fair and level playing field for all technologies based on their inherent strengths, and above all ensure that the proposed regulations maximize the societal benefits. [OAR-2009-0472-7205.1, p.2]

Cummins urges EPA to update its test procedure and calculations to reflect real-world driving. EPA has adopted a 5-cycle fuel economy test for fuel economy labeling purposes, but for CAFE, the Agency still uses the 2-cycle test made up of the Federal Test Procedure-75 (FTP, or "city" driving) and the Highway Fuel Economy Test (HFET, or "highway" driving). In order to maximize the societal benefits the standards are meant to produce, EPA and NHTSA should adopt test cycles and procedures which reflect realworld driving. Administering standards based on test cycles the agencies know are not reality-based will lead to the design of vehicles according to artificial standards and will fail to maximize the societal benefits. [OAR-2009-0472-7205.1, p.2]

Fisker Automotive, Inc.:

Fisker Automotive recommends the following process to calculate emissions and fuel economy. [OAR-2009-0472-8732.1, p.7]

1. Collect data directly from a range of vehicles to assess driver behavior specific to vehicle class. Data should come directly from vehicles—via data loggers and GPS— rather than via survey methods, in order to yield reliable data and reduce costs.

2. Define drive cycles that characterize a vehicle. For example, sweep through the full range of acceleration profiles and speeds possible by the vehicle at various loads and conditions.

3. Digitally map the test results of #2 to the class-specific driver behavior data of #1. This will yield how the tested vehicle will perform as drivers of that class will use them.

4. Report the average of these #3 results onto the fuel economy label, as shown in Figure 3. Make additional data available online.

5. Allow automakers to submit their own data on how their specific vehicle is being used and actually performing. This data would supplant data from #1 and 2, respectively. This will encourage a plethora of fuel-saving and behavior-changing practices and technologies that fall outside possible drive cycles. Some examples include the following.

a. Displays that communicate and reward efficient driving
b. Automaker promotion of efficient driving

c. GPS route optimization, including traffic
d. More convenient charging methods for plug-in vehicles
e. Photovoltaics (solar panels) [OAR-2009-0472-8732.1, p.7]

Drive cycles that attempt to imitate average driver behavior encourage automakers to design for the drive cycles, which inevitably disregards a great deal of vehicle operation. Corrective calculations which aim to adjust the cycle data to approximate reality further distance these figures from the original intent, and do not apply well to diverse technologies. For example, electric, hybrid, and gasoline powertrains have wildly different efficiency maps. Even within the same category, these efficiency maps vary widely depending on the specific architecture and components used. Correction calculations based on the US light duty vehicle fleet may apply moderately well for the most common types of vehicles, but vehicles that fall outside the majority will be unjustly rewarded or penalized by calculations that do not apply well to the specific vehicle. [OAR-2009-0472-8732.1, p.7]

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy:

Current Emissions Testing Protocols
We commend the EPA's efforts to develop tests that provide an accurate method for anticipating fuel economy achieved in real world driving; however, we have found some areas of concern in the current testing procedures and we see potential for improvement in methodology. Our first concern is the discrepancy between testing procedures for cars versus light trucks. We propose that cars and light trucks be tested using as similar a methodology as possible. There are also concerns over the brief testing time of 10 minutes, which does not reflect the average US commute times of 24.3 minutes. We encourage the EPA to increase the length of testing time to reflect these figures and allow more opportunity for variable conditions during testing. Another area where we would like to see increased testing is in the number of new vehicles lines analyzed. The EPA reports that 30 percent of new vehicle models are tested. To get the best measure of total fleet efficiency, we think that a greater percentage of models should be tested off the line. Additional concerns include constant temperature, pressure and engine fluid volume assumptions that likely do not reflect real world conditions. We suggest more variation be added to these tests to cover a more accurate range of on-road vehicle conditions. [OAR-2009-0472-7188.1, p. 9]

[University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.119-121]

U.S. Coalition for Advanced Diesel Cars:

The Coalition takes note of EPA's conclusion, based on a computer simulation, that light duty diesels are not a 'viable or cost effective option.' EPA makes this statement even as 2009 demand for diesel engines by American consumers is strong on vehicles where a powertrain choice is available. In fact, after only a year in the market, the percent of customers selecting clean diesel engines has already matched or eclipsed the percent selecting gasoline hybrids on vehicles that offer consumers a choice . Further, EPA's computer-model driven conclusions are completely at

odds with market realities in Europe, a carbon-constrained region where advanced diesel technology continues to set the bar for drivability, fuel consumption and GHG emissions in real-world driving. In fact, for the Top 10 vehicles sold in Europe last year, diesel-powered versions delivered 17 percent lower GHG emissions than the nearest comparable gasoline engine available. [OAR-2009-0472-7496, p.4]

The Coalition urges EPA to reflect on a few fundamental questions:

-How would the agency's conclusion on diesel technology change if its modeling functions were not anchored on obsolete driving patterns?
-How would it change if the model comprehended off cycle emissions holistically across all technologies, rather than the narrow and selective treatment found in the proposed rules?
-How would it change if the Agency factored in the off-cycle performance of technologies on light duty vehicles American's use to earn a living? [OAR-2009-0472-7496, p.4]

Each day in our country, millions of Americans use their vehicles to load, haul and tow and they are the backbone of our economy. We urge EPA to bring this real-world perspective into the rulemaking so Americans have an opportunity to buy vehicles that deliver the best fuel-saving performance in real-world duty cycles. And the best cost/benefit equation for real-world American families. [OAR-2009-0472-7496, p.4]

The Coalition believes Congress has made its intent clear: sharply reduce light duty petroleum consumption and GHG emissions by 2020 while protecting the consumer's right to affordable and safe products without systematically diminishing consumer choice. The intent of Congress will be frustrated by a regulatory approach that is reliant on paper-based fleet reduction calculations versus one that is built atop real-world conditions where American fuel is consumed and GHG emissions are created. [OAR-2009-0472-7496, pp.4-5]

To better understand driving habits of U.S. consumers, EPA proceeded to complete an exhaustive analysis of real-world driving patterns in the U.S. and the impact of driving patterns and off-cycle energy consumption (e.g., mobile air conditioners) on real-world fuel consumption. This authoritative analysis resulted in the promulgation of new rules in 2006, in which EPA asserted:

'A fundamental issue with today's fuel economy estimates is that the underlying test and calculation procedures do not fully represent current real-world driving conditions.' [OAR-2009-0472-7496, p.5]

Changing the test cycle weighting based on EPA data is a step in the right direction to reality that can and should be done now. The Collation believes it is EPA's obligation: (1) To provide the automotive industry with a reality-based calculation procedure on which to compare the effectiveness of technology choices to regulated parties under rapidly changing limits, and (2) to align these choices with a reasonable estimate of the petroleum fuel and GHG emissions reductions policy makers can expect to achieve as a result of the Administration's rules. [OAR-2009-0472-7496, p.5]

[[See Docket Number OAR-2009-0472-7496, pp.5-7 for a background discussion on CAFE and Label Fuel Economy.]]

Maximize Fuel and GHG Efficiency for Highest Per Capita Fuel Users is Vital

According to data compiled by the U.S. Department of Transportation, the average owner of a new passenger car accumulates 14,200 miles per year while the average light truck owner accumulates 16,100 miles per year. These values for the 'average' American connect to the EPA's 2006 analysis that proved 57 percent of national vehicle miles traveled were at speeds akin to highway conditions, or above a speed cut point of 45 mph. DOT's analysis shows a substantial share of the American driving public is accumulating miles at a rate above the national average. In fact, the data shows 25 percent of all light vehicle owners accumulate more than 18,000 miles per year with nearly 9 percent accumulating more than 36,000 miles per year. The Coalition urges EPA to recognize the following:

-Above average American drivers, in all likelihood, are accumulating more than 57 percent of their annual miles in highway conditions.
-These Americans are the highest per capita consumers of petroleum fuel in the nation where consumption is a function of vehicle efficiency and distance traveled. [OAR-2009-0472-7496, p.7]

We believe EPA should embrace rules, policies and procedures that do not penalize manufacturers that choose to commercialize vehicle technologies that maximize fuel and GHG efficiency in higher speed, higher load operating conditions. EPA should not deter manufacturers from commercializing fuel and GHG reducing technologies that appeal to the highest per capita users of fuel in the U.S. Clearly, vehicle fuel economy and GHG certification calculations that over-weight stop-and-go city driving by 28 percent and understate highway driving by 27 percent (55/45 vs. 43/57) will bias manufacturer technology implementation away from operating conditions in which the majority of U.S. fuel is consumed. [OAR-2009-0472-7496, p.7]

EPA Proposes Continued Inconsistencies Through 2016

In summary, EPA is employing entirely inconsistent calculation methods as it embarks on ground-breaking GHG regulations that will fundamentally govern forward research, technology implementation, capital investment, and job creation in the automobile industry.

-For purposes of regulating vehicles and manufacturers as well as for educating American consumers, EPA proposes to maintain a test cycle weighting that places the primary emphasis on city driving (55/45)
-For purposes of measuring national fuel consumption and GHG emissions reductions - the benefits to be delivered by its rules - EPA is utilizing a mileage weighting that places the emphasis on highway driving (43/57). [OAR-2009-0472-7496, pp.7-8]

Mr. James Hyde:

EPA Response to Comments

Temperature Impacts: All the testing done for the proposed CAFE and C02 standards would be done at in the specified temperature range for EPA testing of 68 to 86°F. The origin of this temperature range is somewhat obscure, but originated when the testing was done primarily for purposes related to summertime ozone problems and to easily accommodate test cell controls. EPA has espoused the concept of 'proportional benefits'. That is, a reduction of a certain magnitude in the test would be reflected by a real-world reduction of about the same magnitude. Perhaps this assumption was valid in the past. There is amble evidence that this does not apply in all circumstances with regard to technologies incorporated for fuel economy increases. There is currently a cold (20° F) standard for carbon monoxide; and this will be extended to hydrocarbons. Regulating and measuring C02 and fuel economy at reduced temperatures is important as most driving is done at temperatures outside the EPA certification temperature range. [OAR-2009-0472-7258.1, p. 1]

It has also been well established that not all fuel economy and emission control measures are as effective at lower (or higher) temperatures as they are at the current test temperatures. This is very clear for hybrid electric vehicle (HEV) technology which is often disabled at low temperatures as an element of the vehicle's design. Design elements which are less effective outside standard test temperatures should not be credited with fuel or C02 reductions which the vehicles do not achieve in actual year-round operation. [OAR-2009-0472-7258.1, p. 1]

C02 Measurement Issues: The current proposal would result in a fleet average *C02* level of 250 g/mi by 2016. Based on EPA's assumption that the 250-g/mi standard would be met by passenger cars achieving an average of224 g/mi and light trucks an average of302 g/mi, and assuming that City emissions are 1.5 times Highway emissions 1 , the expected emissions of *C02* are shown in Table 2. [OAR-2009-0472-7258.1, p. 4] [See OAR-2009-0472-7258.1, p. 4 for Table 2]

These averages can only be achieved by having a substantial number of vehicles with *C02* emissions below the average. But the averages themselves are extremely low compared to the *C02* emissions currently measured. For model year 2009 the fleet average was 440 g/mi compared to the expected 2016 average of 250 g/mi. In fact for all the vehicle tests reported for model year 2009 only four had City emissions at or below 264 g/mi; and only six had Highway emissions below 176 g/mi. This indicated that what is now a rare occurrence will be commonplace in 2016. [OAR-2009-0472-7258.1, p. 4]

The ability of the test procedures in 40 CFR Part 86 to measure *C02* accurately and precisely at these levels needs to be investigated. Because of the reciprocal relationship between *C02* emissions and fuel economy, the uncertainly in fuel economy measurements increases dramatically as the *C02* level is reduced. This is illustrated in figure below. [OAR-2009-0472-7258.1, p. 4] [See OAR-2009-0472-7258.1, p. 4 for the figure]

The larger, red triangles on the base are the observed average for MY2009 and the two standard deviation range boundaries. About 95% of the observed values were in this range. To achieve an average of 250 g/mi the center red triangle would need to move from its current location at 440 g/mi to the smaller green triangle on the left. [OAR-2009-0472-7258.1, p. 5]

In the new range of C02 measurements the change in mpg resulting from a 1.0 g/mi C02 change would be about 0.1 to 0.3 mpg instead of the 0.02 to 0.15 mpg now encountered. When EP A regulated the impacts of certification gasoline on fuel economy they stated: [OAR-2009-0472-7258.1, p. 5]

EPA believes that test fuel specifications, are sufficiently tight when changes in fuel property values within the specified tolerance do not change fuel economy test results by more than 0.01 miles per gallon (mpg). This is the degree of precision EPA has used in determining the effect of other test procedure changes on CAFE. This precision is necessary since as little as 0.01 mpg can affect manufacturers' CAFE as rounded off to the nearest 0.1 mpg. [OAR-2009-0472-7258.1, p. 5]

Clearly this goal cannot be met with current measurement methods. [OAR-2009-0472-7258.1, p. 5]

EPA Response:

Major Test Procedure Changes

Many commenters supported using the current city and highway test procedure for CAFE and greenhouse gas emissions.[1] However, comments from the American Council for an Energy Efficient Economy, Cummins, Fisker Automotive, Sierra Club, U.S. Coalition for Advanced Diesel Cars and the University of California, Santa Barbara recommended that EPA make major changes to test procedures so that the tests would more accurately reflect real-world conditions.

For example, the American Council for an Energy Efficient Economy recommended that EPA "Include in the final rule a statement that GHG emissions testing will be improved to represent real-world emissions and provide a date by which this improvement will occur."

The Manufacturers of Emission Controls Association "supports a 5-cycle approach."

Fisker recommended that EPA "Define drive cycles that characterize a vehicle. For example, sweep through the full range of acceleration profiles and speeds possible by the vehicle at various loads and conditions. Digitally map the test results to the class-specific driver behavior data. Allow automakers to submit their own data on how their specific vehicle is being used and actually performing. This will encourage a plethora of fuel-saving and behavior-changing practices and technologies that fall outside possible drive cycles."

[1] Comments from the Alliance did not directly address the city/highway test procedure, but did indirectly support the use of the current city and highway test procedures. For example, Alliance comments indicated that "The Alliance supports the joint rulemaking, including the proposed coordinated framework and structure. Further, the Alliance supports the proposal that both NHTSA and EPA use an attribute-based approach." AIAM indicate that "AIAM does not support fundamentally changing the fuel economy/greenhouse test procedures at this time. Our reluctance to support such changes is due to the impact that such changes could have on the effective stringency of the standards."

EPA Response to Comments

Mr. James Hyde (public citizen) commented that it may not be appropriate for EPA to require proposed CAFE and CO2 testing to be conducted at the EPA certification temperature range of 68 to 86 degrees F. Mr. Hyde commented that "There is currently a cold (20°F) standard for carbon monoxide; and this will be extended to hydrocarbons. Regulating and measuring CO2 and fuel economy at reduced temperatures is important as most driving is done at temperatures outside the EPA certification temperature range." Regarding hybrid vehicles, Mr. Hyde's comments indicate that hybrid electric vehicle technology "is often disabled at low temperatures as an element of the vehicle's design. Design elements which are less effective outside standard test temperatures should not be credited with fuel or CO2 reductions which the vehicles do not achieve in actual year-round operation."

The U.S. Coalition for Advanced Diesel Cars commented that "We believe EPA should embrace rules, policies and procedures that do not penalize manufacturers that choose to commercialize vehicle technologies that maximize fuel and GHG efficiency in higher speed, higher load operating conditions." Their comments also indicated that "Further, EPA's computer-model driven conclusions are completely at odds with market realities in Europe, a carbon-constrained region where advanced diesel technology continues to set the bar for drivability, fuel consumption and GHG emissions in real-world driving. In fact, for the Top 10 vehicles sold in Europe last year, diesel-powered versions delivered 17 percent lower GHG emissions than the nearest comparable gasoline engine available."

University of California, Santa Barbara commented that "We commend the EPA's efforts to develop tests that provide an accurate method for anticipating fuel economy achieved in real world driving." However, their comments also provided several recommendations including increasing the length of the testing time to "allow more opportunity for variable conditions during testing;" to increase the number of vehicles tested by EPA, and suggested that "more variation be added to these tests to cover a more accurate range of on-road vehicle conditions."

The American Council for an Energy-Efficient Economy (ACEEE), Cummins, and Sierra Club all suggested using more real-world test procedures.

It is not feasible at this time to base the final CO_2 standards on EPA's five-cycle fuel economy formulae. Consistent with its name, these formulae require vehicle testing over five test cycles, the two cycles associated with the CO_2 standards, plus the cold temperature FTP, the US06 high speed, high acceleration cycle and the SC03 air conditioning test. EPA considered employing the five-cycle calculation of fuel economy and GHG emissions for this rule, but there were a number of reasons why this was not practical or otherwise appropriate. As discussed extensively in the Joint TSD, setting the appropriate levels of CO_2 standards requires extensive knowledge of the CO_2 emission control effectiveness over the certification test cycles. Such knowledge has been gathered over the FTP and HFET cycles for decades, but is severely lacking for the other three test cycles. EPA simply lacks the technical basis to project the effectiveness of the available technologies over these three test cycles, and therefore could not adequately support a rule which set CO_2 standards based on the five-cycle formulae. The benefits of today's rule do presume a strong connection between CO_2 emissions measured over the FTP and HFET cycles and onroad operation. Since CO_2 emissions determined by the five-cycle formulae are believed to correlate reasonably with onroad emissions, this implies a strong connection between

emissions over the FTP and HFET cycles and the five cycle formulae. However, while we believe that this correlation is reasonable on average for the vehicle fleet, it may not be reasonable on a per vehicle basis, nor for any single manufacturer's vehicles. Thus, we believe that it is reasonable to project a direct relationship between the percentage change in CO_2 emissions over the two certification cycles and onroad emissions (a surrogate of which is the five-cycle formulae), but not reasonable to base the certification of specific vehicles on that untested relationship. Furthermore, EPA is allowing for off-cycle credits to encourage technologies that may not be not properly captured on the 2-cycle city/highway test procedure (although these credits could apply toward compliance with EPA's standards, but not toward compliance with the CAFE standards for the reasons given in the next paragraph). For future analysis, EPA will consider examining new drive cycles and test procedures for fuel economy

Second, any possible revision to the existing test procedures would also need to consider potential implications for other programs, including the stringency of EPA emission standards (for criteria pollutants and CO2 emissions); fuel economy labeling requirements, and notably, CAFE requirements and gas guzzler requirements. In addition, for CAFE testing of passenger cars EPA is required by statute to "use the same procedures for passenger automobiles the Administrator used for model year 1975 (weighted 55 percent urban cycle and 45 percent highway cycle), or procedures that give comparable results;" Section 49 USC 32904(c) and 40 CFR 600.510-08. Although EPA is not prohibited from developing a different test procedure to evaluate fuel economy of light duty trucks, doing so would yield a mismatch in testing procedures (an undesirable result, as noted by the University of California Working Group in their comments), and would lead to disharmonized programs, undermining a key and legitimate objective of the joint rulemaking effort. In any case, doing so in this rulemaking is well beyond its scope as explained above and in section III.B.1.

Third, to revise the city and highway test procedures would be expected to increase the burden on the automobile industry substantially. Thus, EPA would need to consider appropriate lead time for automakers to address changes in test procedures.

Fourth, the 43/57 weighting factors developed during the 5-cycle fuel economy labeling rule are directly and inherently connected with the use of five-cycle estimates for both city and highway driving the resulting fuel economy values. These weighting factors are not independent and should not be applied to city and highway fuel economy estimates (or CO2 emission values) based solely on the FTP and HFET test cycles. For example, when the methodology used to develop the 43/57 weighting factors is applied to city and highway driving based on the FTP and HFET test cycles, respectively, the result is essentially 55/45, not 43/57. Thus, it would not be consistent with the technical underpinnings of the 5-cycle fuel economy label rule to change the weighting factors used in the present rule.

In summary, EPA considers any major revisions to city and highway test procedures to be outside of the scope of this GHG rule. However, EPA will consider test procedures in the context of future rules setting standards for GHG emissions.

Note that additional information about test procedures is contained in section 5.10.2 of this Response to Comments document.

Test Procedures for Advanced Technology Vehicles

AIAM commented that "It is necessary to have consistent and similar test procedures for battery electric vehicles, plug-in hybrids, and fuel cell vehicles. AIAM urges EPA to pursue the development of such test procedures in conjunction with the Society of Automotive Engineers."

Although EVs and FCVs will have compliance values of zero grams/mile, PHEV compliance values will be determined by combining zero grams/mile for grid electricity operation with the GHG emissions from the 2-cycle test results during operation on liquid fuel, and weighting these values by the percentage of miles traveled that EPA believes will be performed on grid electricity and on liquid fuel, which will vary for different PHEVs. EPA is currently considering different approaches for determining the weighting factor to be used in calculating PHEV GHG emissions compliance values. EPA will consider the work of the Society of Automotive Engineers Committee J1711, as well as other relevant factors. EPA will issue a final rule on this methodology by the fall of 2010, when EPA expects some PHEVs to initially enter the market.

Accuracy of the CO2 Test Procedure

Mr. James Hyde (public citizen) commented that in the future model years, the CO2 levels of some vehicles will become much lower than the CO2 levels of current vehicles, e.g. less than 176 grams/mile. Mr. Hyde recommended that "The ability of the test procedures in 40 CFR Part 86 to measure CO2 accurately and precisely at these levels needs to be investigated. Because of the reciprocal relationship between CO2 emissions and fuel economy, the uncertainty in fuel economy measurements increases dramatically as the CO2 level is reduced."

EPA Response:

EPA is confident that the current CO2 analyzers are more than adequate to measure CO2 emissions at these levels. The same general type of analyzers which are used to measure CO2 emissions are also used to measure carbon monoxide (CO) emissions. We note typical CO emission levels on the city and highway tests are approximately two to three orders of magnitude lower than typical CO2 emissions. For example, the current Tier 2 Bin 5 (50,000/120,000 mile useful life) emission standards for CO on the FTP (city) test are 3.4 and 4.2 grams/mile, respectively. Typical CO emission levels range from 0.1 to 4.2 grams/mile on the city and highway tests.

Beyond the accuracy of the equipment used to measure CO2 emissions, EPA is concerned, as a matter of principle moving into a new era of greenhouse gas control, that greenhouse gas reductions reported for purposes of compliance with the standards adopted in this rule will be reflected in the real world and not just as calculated fleet average emission levels or measured certification test results. Therefore EPA will pay close attention to technical details behind manufacturer reports. For example, EPA intends to look closely at each manufacturer's certification testing procedures, GHG calculation procedures, and laboratory correlation with EPA's laboratory, and to carefully review manufacturer pre-production, production, and in-use testing programs. In addition, EPA plans to monitor GHG performance through its own in-use

surveillance program in the coming years. This will ensure that the environmental benefits of the rule are achieved as well as ensure a level playing field for all.

5.2 Reserved

5.3. EPA Averaging, Banking, and Trading Provisions

Organization: Alliance of Automobile Manufacturers
General Motors Corporation
Toyota Motor North America
Hyundai
Mercedes-Benz USA
Volkswagen
Ford Motor Company
Ferrari S.p.a
Environmental Defense Fund
Public Citizen and Safe Climate Campaign
Sierra Club
Bright Automotive
Porsche

Comment:

Alliance of Automobile Manufacturers

Compliance flexibilities are absolutely necessary to meet the challenging fuel economy and greenhouse gas emissions standards that are being proposed. The flexibilities are crucial because they enable companies to choose different paths for achieving the same CO_2 reductions and fuel economy improvements. As a result, the anticipated benefits of the proposed standards will be realized while enabling companies to comply in the most efficient way given specific product plans and business circumstances. EPA has long recognized that flexible compliance mechanisms such as those being proposed are a necessity for achieving both environmental protections and economic growth, and for this reason have been a staple of EPA emissions regulations.

It is precisely this combination of environmental benefit and implementation efficiency that made the proposed compliance flexibilities integral to the various stakeholders being able to reach consensus on the National Program. [OAR-2009-0472-6952.1, p. 7]

General Motors Corporation

GM especially supports: … the recognition of the need for mechanisms to provide for compliance flexibility in the face of great uncertainty over future technology developments and costs, customer acceptance of these technologies, and the price of fuels that consumers may see in the marketplace. All of these factors make it critical that automakers have some ability to cope with changes or unexpected outcomes, and we believe the proposed rules provide essential flexibility. [OAR-2009-0472-6953.1, p. 2]

Toyota Motor North America

The agencies propose a variety of credit programs and compliance flexibilities, which Toyota generally supports. Not only are these credits and flexibilities consistent with the agreements signed last May and the joint NOI published last spring, but they were integral to Toyota's decision to enter into a commitment. Flexible credit programs allow manufacturers to better manage technology investment and deployment while achieving overall environmental goals. [OAR-2009-0472-7291.1, p. 14]

Toyota generally supports EPA's proposed credit trading program, although it remains unclear, for competitive or other reasons, the extent to which manufacturers will engage in trading with one another or in trading through a third party. Nonetheless, this uncertainty does not argue against establishing such a program in the event credit trading makes sense for the parties involved. [OAR-2009-0472-7291, p.19]

Hyundai

Hyundai is pleased that EPA proposed various forms of credits for compliance flexibility in the joint proposal. Credits can be important for providing a cost-effective means of achieving the standards. [OAR-2009-0472-7231.1, p. 3]

Mercedes-Benz U.S.A

The flexibilities and credits proposed for the greenhouse gas program are essential to allow limited-line manufacturers, such as DAG, to meet these dual responsibilities. They are the only mechanism through which companies in DAG's position can meet the proposed requirements for these model years and continue to invest in advanced technologies that will significantly reduce greenhouse gas emissions over the longer term. [OAR-2009-0472-7193.1, p. 2]

Volkswagen

Volkswagen especially supports the work by both agencies to form their respective regulations to allow averaging, banking, and trading as similar as possible in both programs, and to provide as many credit flexibilities as possible that accommodate the wide range of manufacturers. [OAR-2009-0472-7210.1, p. 2]

Ford Motor Company

CO2 Averaging, Banking and Trading Program

Part §86.1865-12, 'How to comply with the fleet average CO2 standards,' states that 'there are no property rights associated with CO2 credits generated under this subpart. Credits are a limited authorization to emit the designated amount of emissions. Nothing in this part or any other provision of law should be construed to limit EPA's authority to terminate or limit this authorization through a rulemaking'. 74 FR at 49761.

The need for this provision is unclear, and it should be dropped. Compliance planning is a complex coordinated process that considers many factors including vehicle refreshening cadence, manufacturability and credit management. The availability of credits is an important part of a manufacturer's plan to comply with the regulations, and manufacturers rely on the existing rules and credit provisions in their planning process. Abrupt changes in the credit system could upend a manufacturer's plans, potentially making compliance impossible or necessitating drastic, costly actions in order to maintain compliance. The regulations should be designed to prevent the occurrence of such situations. If the agency decides to terminate or limit any flexible mechanisms, then the rules should require adequate lead time for a manufacturer to develop alternative credit schemes and to make the necessary adjustments to its compliance plan. Since manufacturers typically begin to firm up their product plans roughly five years in advance of actual production, the regulation should be amended to allow at least 5 years' lead-time in advance of any changes to the credit provisions of the rules. [OAR-2009-0472-7082.1, p. 10]

Ferrari S.p.a

Ferrari strongly supports the Averaging, Banking, and Trading (ABT) program for CO2 emissions credits, because this approach gives more flexibility to comply without any negative effects for the National Program final target to reduce GHGs. [OAR-2009-0472-7214.1, p.7]

Environmental Defense Fund

You asked a question about all of the various flexibility proposals. We support them all, including obviously trading among manufacturers. The more flexible the better, so long as the accounting is good, the reporting, the monitoring is good and the enforcing is good, but there are cost differences that ought to be respected. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 124.]

Public Citizen and Safe Climate Campaign

Banking, borrowing, transfer and trading also obfuscates automakers' compliance with the program. In the fuel economy program, banking and borrowing alone, without transfer and trading, make it nearly impossible to know whether a manufacturer has complied in a particular model year. The long window in which automakers can trade credits back and forth obscures compliance in a given model year, impeding clear reporting of whether automakers are meeting or falling short of standards. Based on publicly available data, Public Citizen was not able to verify that Ford, GM, Chrysler and Nissan had complied with standards for several model years from 1978-2007. An analysis of records of automaker use of carry-forward and carry-back credits used from 1978-2008 Public Citizen obtained from NHTSA through a Freedom of Information Act (FOIA) request, revealed that Detroit manufacturers avoided $3.1 billion in CAFE fines that otherwise would have been paid, and delayed oil savings associated with these shortfalls. [OAR-2009-0472-7050.1, p.4]

Sierra Club

Ensure that credits do not undermine oil savings and emissions reduction goals. History has shown that credits weaken the standards and erode oil savings. We urge that the agencies avoid repeating this history by establishing credits that will undermine needed oil savings and pollution reductions. EPA proposes a range of new credits that [OAR-2009-0472-7278.1, p.14] can be banked, borrowed and traded to increase flexibility. We are concerned that a broad range of credits may erode oil savings and cause emission reductions to go unrealized. To achieve the oil savings and greenhouse gas emission reductions goals President Obama announced, credits (if awarded) must be tied to actual emission reductions and be part of a transparent system that is publicly reviewable. [OAR-2009-0472-7278.1, p.15]

It is critical that the credits banked, borrowed and traded within this system represent actual emissions reductions. To ensure emission reductions, credits that do not represent actual reductions, including FFV credits and advanced technology vehicle credits, should not be traded or transferred. Additionally, manufacturers should not be allowed to trade or transfer borrowed credits. The vast array of credits and the wide flexibilities proposed for credit banking, borrowing, and trading create a compelling need for compliance transparency. [OAR-2009-0472-7278.1, p.16]

Bright Automotive

Number two is the trading component of this could be a significant incentive or driver, particularly if trading is harmonized. There's one series of product to be traded, not one for NHTSA and not one for EPA, to be able to decide and meet the overall oil and carbon production objectives at the least cost so a company like Bright Automotive would be to able to receive credits to incentivize more production of our vehicles and accelerate their development.

Porsche

Fourth, EPA should modify the credit program so that deficits reflect real world manufacturer-specific lifetime vehicle miles traveled. As proposed by EPA, debits are to be calculated based on a fleet average vehicle miles traveled figure for all of industry as follows:

Debits = [mfr's CO2 deficit x vehicles sold x vehicle lifetime miles)/1,000,000

Where, for passenger cars, vehicle lifetime miles = 190,971 for light trucks, vehicle lifetime miles = 221,199

If a manufacturer can demonstrate to EPA that its passenger car or light truck fleet vehicle lifetime mile numbers are less than the industry averages proposed for inclusion in the above formula, then the deficit should be reduced accordingly.

EPA Response:

Averaging, Banking and Trading Flexibilities

In general, there was considerable support for the proposed averaging, banking and trading flexibilities. Manufacturers generally view these provisions as essential for implementing the GHG standards.

EPA is finalizing an overall credit program which is very similar to that proposed (although we are finalizing a number of detailed changes to the individual credit programs for advanced technology vehicles, alternative fuel vehicles, air conditioning leakage, air conditioning efficiency, and off-cycle technology credits). In the main ABT credit program, the manufacturer will average the CO_2 emissions within each of the two averaging sets (passenger cars and trucks) for each model year's production and compare that with its respective fleet average standards (which in turn will have been determined from the appropriate footprint curve applicable to that model year and averaging set). In addition to this within-company averaging, when a manufacturer's fleet average CO_2 values of vehicles produced in an averaging set over-complies compared to the applicable fleet average standard, the manufacturer could generate credits that it could save for later use (banking) or could sell or otherwise distribute to another manufacturer (trading). Implementation of the credit program generally involves two steps: calculation of the credit amount and reporting the amount and the associated data and calculations to EPA.

EPA continues to believe the ABT provisions are an essential part of the overall program. As noted in section III. C of the preamble to the final rule, ABT is important because it can help to address many issues of technological feasibility and lead-time, as well as considerations of cost. For the GHG standards, which include consideration of credit availability and use, ABT is an integral part of the standard setting itself, and is not just an add-on to help reduce costs. See Husqvarna AB v. EPA, 254 F. 3d 195, 202 (D.C. Cir. 2001) (use of ABT as a factor in providing proper consideration of cost and lead time)In many cases, ABT resolves issues of lead-time or technical feasibility, allowing EPA to set a standard that is either numerically more stringent or goes into effect earlier than could have been justified otherwise. This provides important environmental benefits and at the same time it increases flexibility and reduces costs for the regulated industry.

Averaging, Banking, and Trading (ABT) of emissions credits have been an important part of many mobile source programs under CAA Title II, both for fuels programs as well as for engine and vehicle programs. These programs have operated successfully and without incident for many years with some degree of transparency, and EPA continues to work to improve the transparency of these programs. For example, EPA routinely publishes vehicle emission test results that are associated with the manufacturers' compliance with the Tier 2 ABT program, and in recent years an annual compliance report has provided details regarding the fleet average emissions achieved by manufacturers under the Tier 2 emissions program. Given the successful operation of existing ABT programs, EPA is confident that modeling the new GHG program on these programs is appropriate. EPA will track the use of ABT through its certification and compliance program and, in response to commenters' concerns regarding transparency, plans to make compliance information publicly available, as discussed below. EPA believes that ABT provisions will help manufacturers comply with emissions standards and achieve the emissions reductions associated with the standards.

Credits Must be Tied to Actual Emission Reductions

EPA Response to Comments

The Sierra Club commented that EPA should ensure that credits do not undermine oil savings and emissions reduction goals and recommends that "credits (if awarded) must be tied to actual emission reductions and be part of a transparent system that is publicly reviewable." Public Citizen and Safe Climate Campaign recommended that EPA limit the level by which credit transfers and credit trades may reduce a manufacturer's standard, in line with the limitations contained in the fuel economy program.

EPA is finalizing several key changes to the credit programs which we believe will address the comments of the Sierra Club. We believe that these changes (combined with the limitations being finalized on credit transfers and trades) will also address the concerns of Public Citizen and Safe Climate Campaign.[2] For example, EPA is finalizing the following provisions: (1) the phase-out in the 2016 model year of the credit program for flexible-fueled vehicles (FFVs) that are based on the EISA calculation methodology (consistent with EPA's proposal); (2) the phase-out in the 2016 model year of the credit program using the EISA methodology for dedicated alternative fuel vehicles (again, as EPA proposed); (3) changes in the implementation of the off-cycle technology credit program; and (4) changes to the provisions for advanced technology vehicle incentives for electric vehicles, plug-in hybrids, and fuel cell vehicles, as outlined below.

Flexible Fueled Vehicles: EPA acknowledges that prior to MY 2016, FFV credits may not necessarily represent real-world emissions reductions. However, as EPA noted in the proposal (74 FR 49531), and as many automotive manufacturers confirmed and documented in their public comments, it is necessary to retain these credit opportunities through MY 2015 because automakers have acted in reliance upon them and would lack needed lead time to meet the standards without these opportunities. See also the discussion in section III.C.2 of the preamble to the final rule.

As proposed, in the 2016 and later model years, the calculation of FFV emissions differ substantially from prior years in that the determination of the CO_2 value to represent an FFV model type will be based upon the actual use of the alternative fuel and on actual emissions while operating on that fuel. In essence, these vehicles will largely be evaluated like all others for purposes of ABT starting with MY 2016, so that actual emissions performance will determine potential credit generation. EPA's default assumption in the regulations is that the alternative fuel is used negligibly, and the CO_2 value that will apply to an FFV by default would be the value determined for operation on conventional fuel. However, if the manufacturer believes that the alternative fuel is used in real-world driving and that accounting for this use could improve the fleet average, the manufacturer has two options. First, the regulations allow a manufacturer to request that EPA determine an appropriate weighting value for an alternative fuel to reflect the degree of national use of that fuel in FFVs relative to real-world use of the conventional fuel. Section III.C of the preamble describes how EPA might make this determination. Any value determined by EPA will be published by EPA, and that weighting value would be available for all manufacturers to use for that fuel. The second option allows a manufacturer to determine the degree of alternative fuel use for their own vehicle(s), using a

[2] EPA is not finalizing credit transfer and trading limits similar to those contained in the fuel economy program as recommended by Public Citizen and Safe Climate Campaign. However EPA is finalizing several key changes to EPA's credit programs and several proposed limitations on buying and selling credits to better assure that any credits transfers or trades are tied to actual in-use GHG emission reductions.

variety of potential methods. Both the method and the use of the final results must be approved by EPA before their use is allowed. In either case, whether EPA supplies the weighting factors or EPA approves a manufacturer's alternative fuel weighting factors, the CO_2 emissions of an FFV in 2016 and later would be based on real-world emissions, as follows (assuming non-zero use of the alternative fuel):

$(W1 \times CO_2conv)+(W2 \times CO_2alt)$,

where W1 and W2 are the proportion of miles driven using conventional fuel and alternative fuel, respectively, CO_2conv is the CO_2 value while using conventional fuel, and CO_2alt is the CO_2 value while using the alternative fuel. Comments on the FFV credits provisions are discussed in detail in section 5.7.2.

Dedicated alternative fueled vehicles: For MY 2016 and later, like the FFV credit program described above, these credits will be treated differently in the first years of the program than in the 2016 and later model years. In fact, these credits are essentially identical to the FFV credits except for two things: (1) there is no need to average CO_2 values for gasoline and alternative fuel; and (2) in 2016 and later there is no demonstration needed to get a benefit from the alternative fuel. The CO_2 values are essentially determined the same way they are for FFVs operating on the alternative fuel.

Off-Cycle Technology Credits: For off-cycle credits, EPA has taken steps to ensure that credits are based on real-world emissions reductions. Indeed, the real issue is transparency of documentation. As proposed, off-cycle technology credits will be available for certain new or innovative technologies that achieve real-world CO_2 reductions that aren't adequately captured on the city or highway test cycles used to determine compliance with the fleet average standards. Like the air conditioning credits, these credits are independent of the fleet average calculation. EPA finalized two options for generating these credits: either using EPA's 5-cycle fuel economy labeling methodology, or if that method fails to capture the CO_2-reducing impact of the technology, the manufacturer could propose and use, with EPA approval, a different analytical approach to determining the credit amount. Like the air conditioning credits, these credits will have to be determined separately for cars and trucks because of the differing lifetime mileage assumptions between cars and trucks.

Using the 5-cycle approach is relatively straightforward, and because the 5-cycle formulae account for nationwide variations in driving conditions, no additional adjustments to the test results would be necessary. The manufacturer would simply calculate a 5-cycle CO_2 value with the technology installed and operating and compare it with a 5-cycle CO_2 value determined without the technology installed and/or operating. Existing regulations describe how to calculate 5-cycle fuel economy values, and the GHG regulations contain provisions that describe how to calculate 5-cycle CO_2 values (see section 600.114-08 (to be codified in 40 CFR)). The manufacturer will have to design a test program that accounts for vehicle differences if the technology is installed in different vehicle types, and enough data will have to be collected to address data uncertainty issues. Manufacturers seeking to generate off-cycle credits based on a 5-cycle analysis will be required to submit a description of their test program and the results to

EPA for approval. Given that this procedure will involve application of an existing test procedure, EPA does not believe public notice and comment would be necessary.

As discussed in Section 5.7.4, the manufacturer-developed testing, data collection, and analysis program will require additional EPA approval. EPA received considerable comment from environmental and public interest organizations, as well as from Honda, suggesting that EPA's decisions about which technologies merit off-cycle credit and the amount of such credit should be subject to public notice and comment. Environmental organizations were generally concerned about ensuring that credits under this program are associated with real-world emission reductions, while Honda expressed an interest in maintaining fairness among auto manufacturers. EPA agrees that a public process will help ensure a fair review and alleviate concerns about potential problems with the off-cycle credit calculation and accounting methodology. Therefore EPA intends provide public notice and to seek public comment whenever manufacturers apply for off-cycle credit and do not use the 5-cycle approach to quantify emission reductions. In such instances, EPA will consider any comments it receives in determining whether and how much credit is appropriate. Manufacturers should submit proposals well in advance of their desired decision date to allow time for these public and EPA reviews.

Advanced Technology Vehicle Incentives for Electric Vehicles, Plug-in Hybrids, and Fuel Cell Vehicles: Comments and responses on advanced technology vehicle incentives are provided in section 5.7.3.

Transparency

In general, EPA agrees with Sierra Club's comments that GHG compliance information should be part of a transparent system that is publicly reviewable. EPA's response to comments related to program transparency is provided in section 5.10.1.

EPA's Ability to Terminate or Limit Credit Provisions

The proposed regulations contained text about the credit process, stating that "Nothing in this part or any other provision of law should be construed to limit EPA's authority to terminate or limit authorization through a rulemaking." (74 FR 49761). Ford Motor Company commented that this statement should be dropped because of lead-time concerns. Ford stated that "Since manufacturers typically begin to firm up their product plans roughly five years in advance of actual production, the regulation should be amended to allow at least 5 years lead-time in advance of any changes to the credit provisions of the rules."

This language, which has been incorporated in every light-duty ABT program to date, ensures that EPA has the regulatory authority to make appropriate determinations regarding credit balances when issuing new regulations. For example, if EPA were to issue another GHG regulation taking effect in 2017, the incorporation of this regulatory language would allow EPA to decide the extent to which manufacturers may or may not continue to hold or use credits from the prior GHG program. However we believe that the rulemaking process is quite robust in nature and more than adequate to consider manufacturers' lead-time needs. Indeed, as noted above and in section III.C.2 of the preamble, legitimate considerations of lead time are the reason

EPA is not adjusting FFV credits until model year 2016. While each rulemaking involves a unique set of circumstances, EPA has historically attempted to balance the genuine concerns and needs of the automobile industry as part of its consideration of availability of control technology, cost, necessary lead time and other factors relevant under section 202 (a) (1) consistent with the ultimate statutory objective of improved health and welfare of the American public. In summary, EPA understands the concerns of the commenter, but continues to believe that our cautionary statement is both needed and appropriate.

Manufacturer-Specific Lifetime VMT for Credit Calculations

Porsche recommended that "EPA should modify the credit process so that deficits reflect real world manufacturer-specific lifetime vehicle miles traveled."

As explained in the proposal, the purpose of assigning lifetime VMT values to credits is to allow fungible credit transferring (from car to truck programs and vice-versa) and fungible credit trading programs between manufacturers, given the fact that trucks are typically driven more miles than cars. It is important for the regulations to account for the difference in expected lifetime vehicle miles traveled (VMT) between cars and trucks in order to preserve CO_2 reductions when credits are transferred between cars and trucks. Assigning lifetime VMT values to car/truck credits and debits thus enables an important flexibility to manufacturers – the ability to transfer credits across fleets. For example, as stated in the proposal (74 FR 49516) "Because EPA is proposing to allow unlimited credit transfer between a manufacturer's car and truck fleets, the two fleets can essentially be viewed as a single fleet when manufacturers consider compliance strategies. Manufacturers can thus choose on which vehicles within their fleet to focus GHG reducing technology and then use credit transfers as needed to demonstrate compliance, just as they would if there was a single fleet standard."

Regarding Porsche's request to allow the use of manufacturer-specific VMT, such an approach would introduce an immense level of complexity into the process of buying and selling credits and raises significant questions and concerns about implementation and transparency. For example, if EPA were to consider such a request, the next logical step would be to differentiate VMT by vehicle models, or by technologies. For example, are Ford Mustangs driven more miles than Chevrolet Corvettes? Or are convertibles driven fewer miles than non-convertibles? Is there a difference in VMT between minivans and two-door sedans? Or between one person and their neighbor? The answer to all of these questions may be yes (or 'sometimes'), but EPA simply does not have the capacity to readily, accurately, and fairly consider these issues at this point in time or to include such consideration in the final rule. If EPA were to entertain Porsche's concept, EPA would be obligated to evaluate the driving behavior of all manufacturers' vehicles to ensure a level playing field between manufacturers whose vehicles are driven more miles and those whose vehicles are driven fewer miles.

Additionally, if EPA were to allow such an option, manufacturers would only request use of this option if it were to their benefit. In other words, manufacturers earning deficits would seek to use lower VMT values so that they would have to offset a smaller deficit (as is the case with Porsche; the specifically stated that they believe their vehicles are driven fewer miles), and manufacturers earning credits would seek to enhance their earnings by requesting to use higher

VMT values. Thus the only equitable way to account for differing VMT across manufacturers would be to require every manufacturer to provide EPA with a rigorous and statistically significant analysis that would estimate the lifetime VMT of their fleet. Continual updates would be required to reflect changes to a manufacturer's fleet that occur with each model year, as well as changing driving behavior and conditions. Such a program would quickly become unmanageable and unduly complicated from a bookkeeping and transparency perspective. EPA recognizes that fundamentally any vehicle make or model may be driven more or less than another make or model, and that the use of an average lifetime VMT factor will, by definition, not represent the specific experience of every manufacturer, make, or model. However, as noted above, the purpose of the lifetime VMT factor is to preserve emission reductions when transferring vehicles between car and truck fleets, and EPA believes that this purpose is served adequately by the use of average lifetime VMT values.

EPA and NHTSA Credit Programs

Bright Automotive suggests that there should not be separate and independent credits systems for the EPA and NHTSA programs. EPA understands that one system might offer advantages for manufacturers but EPA believes that the two programs must remain separate. The two programs have been carefully constructed to achieve similar objectives from a fuel economy and CO_2 reduction stand-point. However, the two agencies' programs have several differences, due to differences in statutory authority and EPA's program includes several credit programs that are not part of the NHTSA program. This and other differences make the suggested approach unworkable.

5.3.1. Five Year Carry-forward/Three Year Carry-back

Organization: Hyundai Motor Company
Center for Biological Diversity
Toyota Motor North America
Natural Resources Defense Council
United Auto Workers
Kia Motors
Chew, Yuli

Comment:

Hyundai Motor Company

EPA will use the same five-year carry-forward and three-year carry-back time periods for credits allowed under NHTSA's CAFE program. Additionally, we support a phase-out or discounting of credits under EPA's GHG program after the five-year carry-forward period. To align with the California GHG program in this area, we recommend that EPA adopt the credit discounting permitted under California's GHG program as follows: [OAR-2009-0472-7231.1, p.3]

[Following comments are from LA Testimony, OAR-2009-0472-7283 p.67-72]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 80-81.]]

More specifically, we support the proposed credit carry-forward and carry-back time periods under both EPA and NHTSA programs.

In addition, we would support expanding the carry-forward provisions under the GHG program to include a phase-out or discounting of credits after the five-year period. This practice was permitted under the California regulations and would provide even further compliance flexibility.

Center for Biological Diversity

Third, deficit "carry-back" credits must be avoided. As proposed, manufacturers who fail to comply with the standards for up to three years could earn credits if they exceed the standards in the following year, and use these credits to avoid penalties for having failed to comply in the preceding years. "Carry-back" credits, however, undermine the purpose of the Agencies' efforts not only because they would incentivize delays in investment and technological innovation and thus undercut EPCA's intent, but also because the benefits of avoiding the emission of a ton of GHGs today exceed the benefits of avoiding the release of the same ton of GHGs several years from now. In fact, the Proposed Rule already recognizes this fact but fails to apply it. As the Proposed Rule correctly notes, GHGs remain in the atmosphere for decades and, in the case of CO2, for millenia. Proposed Rule, 74 Fed. Reg. 49583. "A substantial portion of CO2 emitted into the atmosphere is not removed by natural processes for millennia, each unit of CO2 not emitted into the atmosphere avoids essentially permanent climate change on centennial time scales." 74 Fed. Reg. 49589. As a consequence, remedial efforts get more expensive the longer they are delayed: "SCC is expected to increase over time, because future emissions are expected to produce larger incremental damages as physical and economic systems become more stressed as the magnitude of climate change increases. Indeed, an implied growth rate in the SCC can beproduced by most of the models that estimate economic damages caused by increased GHG emissions in future years." 74 Fed. Reg. 49613. Or, as stated elsewhere in the Proposed Rule, "[d]elaying mitigation efforts could result in substantially higher costs of stabilizing CO2 concentrations." 74 Fed. Reg. 49613. Even setting aside the potential of triggering catastrophic events and assuming arguendo that the SCC grows by no more than a linear 3% per annum as EPA assumes, it is undoubtedly vastly preferable to remove a given ton of carbon in Year 1 rather than in Year 4, when it has wrought that much more damage.23 Moreover, also as acknowledged elsewhere in the Proposed Rule, "voluntary non-compliance is impermissible for the GHG standards proposed under the CAA," 74 Fed. Reg. 49522; thus, a rule allowing manufacturers to choose not to comply with a standard in any given year is illegal. In sum, deficit "carry back" credits are bad economic and environmental policy as well as in violation of EPCA and the CAA.

Fourth, while over-compliance "carry forward" credits (i.e., the ability to apply credits for over-compliance in Year 1 to remedy compliance failures in Year 1+n) are commendable within limits because they indeed incentivize early technological investment and innovation, and initially accelerate the rate of removal of GHGs from the atmosphere, allowing such "carry forward" credits for a period of five years is excessive. A five year "carry forward" period would remove

the incentive to incorporate newly developed technology into the nation's vehicle fleet for far too long, and, after the initial spurt, stagnate rather than drive progress. These detriments could be balanced against the evident benefits of limited "carry forward" credits by selecting a shorter application period, such as one or two years. Moreover, no such credits should be allowed unless a manufacturer can demonstrate additionality and quantify and verify the amount by which its performance actually exceeded the standard. [EPA-OAR-HQ-0472-7265.1]

Toyota Motor North America

As directed by EISA and interpreted by NHTSA in previous rulemakings, CAFE credits earned by a manufacturer in a model year after 2007 can be applied (subject to certain adjustments and limits) for a period of up to five model years after the year in which they were earned. This 5-year 'carryforward' provision is also proposed by EPA, although subject to different adjustments and limits . Further, EISA provides manufacturers the flexibility to 'borrow' credits up three years into the future (again, with certain adjustments and limits) to address potential compliance shortfalls in a given model year. This 3-year 'carryback' provision is also proposed by EPA, although subject to different adjustments and limits. [OAR-2009-0472-7291, p.18]

Notwithstanding the comments above concerning the adjustment factors proposed by the agencies for transferring credits, Toyota supports the 5-year carryforward and 3-year carryback proposals by EPA in order to maintain consistency between the two programs for the purpose of technology and product planning. [OAR-2009-0472-7291, pp.18-19]

Natural Resources Defense Council

Restrictions on Average, Banking, and Trading Provisions for GHG Standards are Necessary to Preserve Environmental Benefits and Avoid Delays in Adoption of New Technologies

NRDC does not oppose EPA's proposal for MYs 2012 to 2016 to limit credit banking to five years and deficit carry-forward to three years. We recommend, however, that EPA evaluate the credit banking and deficit carry-forward time periods to determine if they can be reduced for MY 2017 and subsequent model years. Long banking and borrowing periods have the potential delay deployment of cost-effective GHG control technologies. As MY 2012-2016 vehicles are produced and sold, EPA should carefully evaluate whether or not the allotted banking and deficit carry-forward time periods are necessary for cost-effective achievement of the GHG emissions standards. [OAR-2009-0472-7141.1, p. 9]

Finally to prevent any credit "shell games" from delaying the adoption of new technologies, manufacturers should also be prevented from banking, transferring or trading credits in any given year if they are running deficit [sic] in either their car or truck fleet in that year. This prevents, for example, any manufacturer from simultaneously banking credits while carrying forward a deficit. [OAR-2009-0472-7141.1, p. 10]

United Auto Workers

Third, the UAW supports the proposals in the regulations for program flexibilities to help automakers achieve compliance with the tougher standards. These provide a sensible transition to a regime of annual increases in light-duty vehicle fuel efficiency after a long period of regulatory inaction. We believe that EPA made the correct decision that it should limit its proposal for carry-back and carry-forward credits to the limits established by the Energy Policy and Conservation Act for the CAFE program. [OAR-2009-0472-7056.1, p.3]

Kia Motors

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, p.172]

While we fully support the five-year carry-forward period for credits under both the greenhouse gas and fuel economy programs, we would also support the addition of a phase-out or discounting of credits under the greenhouse gas program after the five-year carry-forward period.

Chew, Yuli

For EISA transfer caps issue, I notice that the limit of 1-year carry-forward and 3-year carry-backward is different from what had been adopted in CARB's Greenhouse Gas Regulation. While the Regulation is stricter than CARB's, it will create confusion among CA and other Section 177 States. I support that GHG standard should have a 5-year carry-forward as specified by CARB for Large Volume Manufacturers to allow for advance notice period. [OAR-2009-0472-7042.1, p.1]

As consistent in California's Greenhouse Gas Standards, I support that the carry-forward of GHG credits be allowed for Small Volume and Independent Volume Manufacturers until 2016 Model Year or 3 Model Years after their size category classification changed to Large Volume Manufacturers. [OAR-2009-0472-7042.1, p.1]

I support harmonization with California's Standard of using a 5-years fleet average method, which means, 5 years carry-back provision as compared to 3 year carry-back provision as in EISA. Any deficit at the end of 5 years will have to be made whole or face CAA violation at the end of the following year. [OAR-2009-0472-7042.1, p.1]

I am concerned that the two fleet approach will result in some manufacturers would begin producing bigger trucks and thus able to gain a lot of credits to subsidize the deficiency in the passenger car standard. I would suggest that the credits from trucks have a useful lifespan of just 2 years if they are use to equalize the deficits in the passenger cars. This will maintain the stricter standard of passenger car and reducing the incentives of "gaming" the benefits of gaining large quantities of credits from trucks which are based on looser standards. [OAR-2009-0472-7042.1, pp.2-3]

For the compliance program, I am concerned about the divergence from CARB's Regulation on the time limit on the compliance, such as based on 5-year Fleet Average as in CARB as expressed in. I am also concerned that Intermediate Volume Manufacturers is treated the same

way for compliance, 1-year carry forward credits and 3-year carry backward provisions without given them sufficient time to comply. [OAR-2009-0472-7042.1, p.4]

EPA Response:

EPA received a number of comments regarding the credit carry-back and carry-forward provisions. Many supported the proposed consistency of these provisions with EISA and the flexibility provided by these provisions, and several offered qualified or tentative support. For example, NRDC encouraged EPA to consider further restrictions in the 2017 and later model years. Public Citizen expressed concern regarding the complexity of the program and how these provisions might obscure a straightforward determination of compliance in any given model year. The Center for Biological Diversity expressed concerns regarding the provisions, particularly with respect to allowing manufacturers to carry a deficit forward. At least two automobile manufacturers suggested modeling the program after California, which allows credits to be carried forward for 5-years, plus a phase-out or discounting of credits in the 6th year (discounted to 50%) and the 7th year (discounted to 25%). In the California program, any unused credits would expire after the end of the seventh year.

For other of its Title II emission control programs, EPA has sometimes initially restricted credit life to allow time for the Agency to assess whether the credit program is functioning as intended. When EPA first offered averaging and banking provisions in its light-duty emissions control program (the National Low Emission Vehicle Program), credit life was restricted to three years. The same is true of EPA's early averaging and banking program for heavy-duty engines. As these programs matured and were subsequently revised, EPA became confident that the programs were functioning as intended and that the standards were sufficiently stringent to remove the restrictions on credit life. EPA has also previously allowed a limited deficit carry-forward, for example in the NLEV and Tier 2 programs. EPA is therefore acting consistently with our past practice in finalizing reasonable restrictions on credit life and a limited deficit carry-forward in this new program. Section 202(a)(1) of the Clean Air Act clearly allows EPA the discretion to include provisions such as these, and as noted above EPA has used these provisions in the past in programs that have significantly advanced environmental protection and air quality improvements.

The inclusion of these provisions in these regulations accounts for the ability of credit generation as well as limited deficit carry-forward to address lead time issues such as a variation in the percentage of models that are redesigned each year by a manufacturer, as discussed in Section III.D of the preamble, and to address inaccuracies that can occur in a manufacturer's projections for future vehicle sales for any given model year, leading to not achieving the fleet average for that model year. For example, fuel price fluctuations and other factors can influence consumer attitudes and buying behavior. By the time it becomes clear at the end of a model year that the manufacturer did not achieve their fleet average standard, their product line for the next model year is essentially locked in and the subsequent model years are already well along in the development process. EPA believes that allowing a deficit carry-forward of three years gives manufacturers enough time to adequately respond to variations in a model year with appropriate limitations that provide for continued improvements in emissions. In particular, note that the regulations provide restrictions on carrying deficits forward that prevent a "shell game" of

continually moving deficits forward and never actually being in compliance. These provisions require that manufacturers not have a deficit in any year in which they are paying off a deficit from a prior year. For example, if a manufacturer incurs a deficit in three consecutive model years, then they have to "pay off" all three years of deficits. They are not allowed to pay off the deficit from three years in the past and carry forward the deficit forward from the other past years; allowing this would clearly allow a continual shifting forward of deficits that would be unacceptable. (See the following response for the applicable regulatory citations.) In addition, the long term nature of the greenhouse gases at issue means that there is no significant environmental difference by allowing this limited carry-forward. EPA believes that this and other provisions provide effective protections and that the environmental benefits of the program are not at risk as a result of the deficit/credit provisions. Finally, EPA notes that this is also consistent with the CAFE program being adopted by NHTSA.

The Agency believes that a credit life of five years represents an appropriate balance between promoting orderly redesign and upgrade of the emissions control technology in the manufacturer's fleet and the policy goal of preventing large numbers of credits accumulated early in the program from interfering with the incentive to develop and transition to other more advanced emissions control technologies. Early credits generated by a manufacturer are also subject to the five year credit carry-forward restriction based on the year in which they are generated. This limits the effect of the early credits on the long-term emissions reductions anticipated to result from the new standards. EPA continues to believe that the approach of five year carry-forward and three year carry-back of credits is appropriate.

Banking and Trading Restrictions:

The National Resources Defense Council (NRDC) recommended that manufacturers should "be prevented from banking, transferring or trading credits in any given year if they are running [a] deficit in either their car or truck fleet in that year. This prevents, for example[,] any manufacturer from simultaneously banking credits while carrying forward a deficit."

Regarding the NRDC comments, EPA proposed that the manufacturer must use any credits earned to offset any deficit that had accrued in the current year or in a prior model year that had been carried over to the current model year. Thus EPA proposed, and is finalizing, exactly what NRDC recommended. Specifically, section 86.1865-12(k)(7)(i) in the final regulations states: "Before trading or carrying over credits to the next model year, a manufacturer must apply available credits to offset any deficit, where the deadline to offset that credit deficit has not yet passed." NRDC also commented that such a provision is necessary to prevent credit "shell games" from delaying the adoption of new technologies. EPA's Tier 2 program includes such a restriction, and EPA is applying an identical restriction to the GHG program. Simply stated, a manufacturer may not bank (or carry forward) credits if that manufacturer is also carrying a deficit. In such a case, the manufacturer is obligated to use any current model year credits to offset that deficit. Specifically, section 86.1865-12(k)(8)(i) of the final regulations addresses this concern by requiring that "Manufacturers are not permitted to have a credit deficit for four consecutive years." In other words, if they have carried a deficit forward for three years after the year in which it is generated, as allowed by the regulations, they can not have a deficit in the

following model year. This prevents the "shell game" approach of continually being in a deficit situation.

5.3.2. Credit Transfers

Organization: Ford Motor Company
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
State of New Jersey
Chew, Yuli

Comment:

Ford Motor Company

Ford supports EPA's streamlined megagram approach to account for expected vehicle lifetime miles traveled (VMT) between cars and trucks in order to preserve CO_2 reductions when credits are transferred between cars and trucks. [OAR-2009-0472-7082.1, p. 9]

Alliance of Automobile Manufacturers (Alliance)

Vehicle Miles Traveled Adjustment Factors

In NHTSA's MY 2011 final rule, the agency requires an adjustment to credits for lifetime vehicle miles traveled (VMT). NHTSA's finalized adjustment factors are 152,000 miles for domestic and imported passenger cars and 179,000 miles for light trucks. 74 Fed. Reg. at 14,432. [OAR-2009-0472-6952.1, p.53]

In the joint 2012-2016 proposal, EPA proposes that VMT adjustment factors should be 190,971 for cars and 221,199 for trucks. 74 Fed. Reg. 49,572. [OAR-2009-0472-6952.1, p.54]

Recommendation:

These adjustment factors are almost identical. To better harmonize the 2012-2016 regulations, the Alliance recommends that the agencies agree upon one set of VMT adjustment factors for use in credit calculations for both EPA and NHTSA. [OAR-2009-0472-6952.1, p.54]

Toyota Motor North America

NHTSA's existing CAFE regulations specify the method by which credits (or deficits) are calculated for a regulated fleet in a given model year. In its rulemaking establishing 2011 model year CAFE standards, NHTSA established an adjustment factor to be applied when credits are transferred from one fleet into another. The procedure takes into account the difference in base fuel economy of the fleet generating the credits and the fleet to which credits are transferred, and also takes into account the different lifetime mileage accumulation between cars and trucks (when credits are transferred between one of the car fleets and the truck fleet, or vice-versa).

These adjustments are intended to 'balance' the fuel savings when credits are transferred, and are intended to address the sales-weighted harmonic averaging basis of CAFE compliance. [OAR-2009-0472-7291, p.18]

Because CO2 emissions are mass-based, EPA proposes that credits (or deficits) be calculated on the basis of a sales-weighted arithmetic averaging of emissions within a fleet, expressed in mega grams. Toyota supports this approach. Because these credits (or deficits) are mass-based, the only adjustment needed when transferring between fleets is to account for differences in lifetime mileage accumulation between the fleets in which credits are earned and used. EPA proposes lifetime mileage accumulation rates for cars and trucks this purpose. [OAR-2009-0472-7291, p.18]

In essence, both agencies are seeking to accomplish the same objective - that is, to base credits transferred between fleets on 'consumption' in order to value credits on a one-to-one basis, regardless of the fleet in which the credit is generated or the base fuel economy (or emission) level of the fleet. Toyota recognizes the rationale for this approach, but urges the agencies to use the same mileage accumulation rates for cars and trucks in order to maintain relative equivalency in each program for credits transferred between fleets. Toyota has no preference concerning the use of EPA's mileage accumulation rates or NHTSA's rates, but common values should be used for cars and trucks in both programs. [OAR-2009-0472-7291, p.18]

Credit Transfers Between Fleets

Toyota fully supports EPA's proposal to allow unlimited credit transfers between the car and truck fleets (subject to the carryforward and carryback provisions). From an environmental viewpoint, offsetting a compliance shortfall in one fleet with over compliance in another fleet achieves the same result as marginal compliance in both fleets. The atmosphere does not recognize the difference between a ton of carbon saved from a car or from a truck, nor is there a difference between saving a gallon of gasoline from a car or truck - both have equal energy security benefits. Toyota has long held the view that artificial limits on credit transfers between regulated fleets in the CAFE program are counterproductive, serve to reduce manufacturer flexibility and increase costs for consumers. [OAR-2009-0472-7291, p.19]

State of New Jersey

The Department supports the proposal's determination to express credits based on vehicle lifetime mileage estimates. [OAR-2009-0472-7109.1, p.8]

Chew, Yuli

I would suggest limit the usefulness of credits obtained from trucks for MY 2012-2016 to equalize the deficits of passenger cars to just two years or less. After which, these credits can only be used for trucks only. [OAR-2009-0472-7042.1, p.6]

In the final rule, I suggest limit the usefulness of the credits from trucks to be able to counter the deficits from the passenger cars to just, say 3 years or less; alternatively, slowly phrase down the

percentage of deficits from passenger cars that can be balanced by credits from trucks over a period, e.g. reducing 20% per year from 2012 and these trucks credits cannot be used to average out the deficits in the passenger cars. [OAR-2009-0472-7042.1, p.6]

Public Citizen and Safe Climate Campaign

The agencies both propose to allow manufacturers to bank, borrow, transfer and trade credits. Automakers have availed themselves of the option to bank and borrow credits for their respective car and light truck fleets since the fuel economy program started in 1978. EPCA, as amended by EISA, provides clear restrictions on the extent to which credit transfer and trading can degrade the level of fuel economy a manufacturer achieves in a given model year. Although the CAA does not have a specific restriction regarding credit transfer and trading, EPA does not propose limiting it. EPA also proposes to adopt the three years of carry-back and five-years of carry-forward from the fuel economy standards in the interest of harmonizing the two programs. EPA need not water down the stronger statutory authority of the CAA to suit NHTSA's standard setting under EPCA. The CAA expressly requires that EPA issue protective standards to ensure public health and welfare. It is particularly egregious to then extend the weaknesses of EPCA further than NHTSA has in its standards. [OAR-2009-0472-7050.1, p3]

EISA extended the carry-forward window from three to five years, and allowed for credit transfer between fleets and trading among manufacturers. These changes were made based on recommendations in the 2002 National Academy of Sciences (NAS) evaluation of the fuel economy program. Since credit trading and transfer will not occur under the fuel economy program until the 2011 model year, we have no data on how manufacturers might use this program. There is significant uncertainty about whether automakers would actually trade credits and the implications of creating a market for these credits. To the extent that credits are traded among manufacturers in both programs, we urge that EPA limit the level by which credit transfer and trading may reduce a manufacturer's standard, in line with the limitation contained in the fuel economy program. [OAR-2009-0472-7050.1, p.3]

EPA Response:

Overall Credit Transfer Approach

Ford, Toyota and the State of New Jersey supported the proposed unlimited credit transfers between car and truck programs. They also supported EPA's proposed megagram approach to account for expected vehicle lifetime miles traveled (VMT) differences when transferring credits between cars and trucks (and visa-versa), which is discussed below. EPA is finalizing these approaches with very little change from the proposal.

Mr. Yuli Chew recommended "limiting the usefulness of credits obtained from trucks for MY 2012-2016 to equalize the deficits of passenger cars to just two years or less. After which, these credits can only be used for trucks only." Regarding Mr. Chew's recommendation, EPA finalized averaging, banking, and trading provisions which are generally consistent with those included in the CAFE program, with a few notable exceptions. As with EPA's approach, the CAFE rules allow five year carry-forward of credits and three year carry-back. Under CAFE, transfers of

credits across a manufacturer's car and truck averaging sets are also allowed, but with limits established by EISA on the use of transferred credits. The amount of transferred credits that can be used in a year is limited, and transferred credits may not be used to meet the CAFE minimum domestic passenger car standard. CAFE rules allow credit trading, but again, traded credits cannot be used to meet the minimum domestic passenger car standard. EPA did not propose, and is not adopting, these constraints on the use of transferred credits. Commenters did not submit any analysis justifying such restrictions, and EPA continues to believe that such restrictions would be inappropriate, adding costs to the CAA program by reducing manufacturers' flexibilities, and would do so without corresponding environmental benefit since the overall stringency of the GHG standards could be affected.

Mr. Chew's recommendation was not adopted in the final rule because EPA continues to believe that the proposed approach is reasonable and does not believe there is a reason provided that would justify making a change to the program.

In general, EPA is also not adopting the limits on credit transfers and trading that are contained in the NHTSA program. EPA historically has not placed limits on the amount of credits that may be transferred or traded in light-duty vehicle programs such as Tier 2 and does not believe such limits are necessary for the GHG program. Where needed, EPA is placing restriction on certain credit provisions such as MY2009 early credits, as described in section 5.7. EPA is also finalizing certain credit restrictions in the TLAAS program as described in 5.4. EPA believes it is appropriate to narrowly tailor credit restrictions where necessary to address specific issues rather than a general restriction on how credits may be transferred or traded.

VMT Adjustment Factors for Passenger Car and Truck Credits

The Alliance, AIAM and Toyota commented that the NHTSA and EPA should use the same lifetime vehicle miles traveled (VMT) adjustment factors to facilitate GHG credit transfers between car and trucks. EPA is promulgating VMT values that differ from the proposal. The difference is attributable to lower projected fuel prices relative to those used in the NPRM analysis. EPA's proposed and finalized VMT values are as follows:

Vehicle Type	Proposed VMT	Finalized VMT
Car	190,971	195,264
Truck	221,199	225,865

The regulations use these VMT values to account for the difference in expected lifetime vehicle miles traveled (VMT) between cars and trucks in order to preserve CO_2 reductions when credits are transferred between cars and trucks. As directed by EISA, NHTSA accomplishes this in the CAFE program by using an adjustment factor that is applied to credits when they are transferred between car and truck compliance categories. Rather than use a conversion factor that would apply to credit transactions, EPA is expressing credits when they are generated in total lifetime Megagrams (metric tons). In this way credits may be freely exchanged between car and truck compliance categories without the need for adjustment. A discussion of the derivation of the estimated expected vehicle lifetime miles traveled can be found in Chapter 4 of the Joint

Technical Support Document. NHTSA's response to this issue can be found in Chapter VIII of NHTSA's Final Regulatory Impact Analysis.

5.4 Temporary Lead-time and Small Volume Manufacturers

5.4.1 Temporary Lead-time Program

Organization: Jaguar Land Rover
Mercedes-Benz (Daimler AG)
Association of International Automobile Manufacturers (AIAM)
Alliance of Automobile Manufacturers (Alliance)
Volkswagen Group of America (Volkswagen)
Toyota Motor North America
BMW of North America, LLC (BMW)
Center for Biological Diversity
Public Citizen and Safe Climate Campaign
Union of Concerned Scientists
American Council for an Energy Efficient Economy
Sierra Club
National Automobile Dealers Association (NADA)
Society of Motor Manufacturers and Traders Limited
Porsche Cars North America, Inc.
New York State Department of Environmental Conservation
Mass Comment Campaign (2,332) (unknown organization)
Pendleton, Tom

Comment:

Jaguar Land Rover

Following separation from Ford Motor Company in June 2008, JLR has become a low volume niche manufacturer producing on average 60,000 vehicles (per model year) across both brands for the US market. In California JLR is recognized as an Intermediate Volume Manufacturer and consequently adheres to alternative emissions regulations. Prior to separation, JLR comprised just 3% of Ford's US Passenger Car and Light Duty Truck fleet. [OAR-2009-0472-7504, p.2]

The Temporary Lead-Time Allowance Alternative Standard enables qualifying manufacturers to achieve a target which is 125% of the footprint based target for a limited number of vehicles between 2012 and 2015. This flexibility was recognized and supported by the wider industry in the Alliance of Automobile Manufacturers comments on this rule. [OAR-2009-0472-7504, p.6]

JLR also submitted substantial information regarding their product plans and emissions reduction capabilities. This information was submitted as confidential business information.

Mercedes-Benz (Daimler AG)

The Temporary Lead Time Allowance Alternative Standards (TLAAS) is critical to ensuring that the National Program actually works. EPA has carefully constructed the TLAAS to provide essential lead time for limited-line, lower-volume manufacturers to transition to a GHG program that is devoid of the compliance alternative available in the CAFE program. As a mechanism to provide lead time to a defined subset of manufacturers, the TLAAS falls squarely within and is an appropriate exercise of EPA's discretion.

When prescribing regulations to reduce air pollutants, the Clean Air Act directs EPA to consider the time "necessary to permit the development and application of the requisite technology." 42 U.S.C. § 7521(a)(2). The Clean Air Act entrusts the scope of lead-time allowances to the sound discretion of EPA. See, e.g., Husqvarna AB v. EPA, 254 F.3d 195, 202 (D.C. Cir. 2001) (showing lead-time provisions evaluated by courts for "substantial evidence"); Natural Resources Defense Council, Inc. v. EPA, 22 F.3d 1125, 1137-40 (D.C. Cir. 1994) (acknowledging that EPA has authority to select implementation deadlines where statute does not specify deadlines explicitly).

Courts have repeatedly deferred to the Agency's evaluation of the time needed to implement the technology contemplated in a new rule. See National Resources Defense Council, Inc. v. EPA, 655 F.2d 318, 331 (D.C. Cir. 1981). This is largely because courts have recognized that the Agency is best placed to evaluate the various factors that tell in favor of lead time. See, e.g., Geier v. American Honda Motor Co., Inc., 529 U.S. 861, 879 (2000) (acknowledging four factors cited by NHTSA justifying the lead-time period for passive restraints in automobiles); Sierra Club v. EPA, 325 F.3d 374, 378 (D.C. Cir. 2003) (acknowledging the Agency's discretion to consider various factors in fashioning lead-time provisions).

Indeed, EPA has previously implemented or supported targeted lead-time provisions, similar to the TLAAS, with the approval of the federal courts. When promulgating new levels of acceptable lead additives in gasoline, for example, EPA "exempted small refiners from the lead content rules . . . in recognition of the special lead-time problems faced by this group." Similarly, EPA's 1997 Rule concerning Compliance Assurance Monitoring (CAM) incorporated a staggered lead-time provision that afforded different "sources" different amounts of time to comply.

EPA has properly recognized the need for limited-line, lower-volume manufacturers to be accorded sufficient lead time to enable their fleets to transition to the structure of the GHG program. Significantly, the TLAAS does not alter these companies' responsibility to comply, but rather makes allowance so that the standard applicable to these companies better reflects the traditional composition of their fleets in the U.S. market during the model years covered by this regulation. The necessity and structure of the TLAAS fall squarely within the types of lead time allowances EPA has adopted and the federal courts have previously approved as an appropriate exercise of agency authority under the Clean Air Act.

Just as with the passive restraint phase-in upheld in Geier, various considerations support the TLAAS. First, the proposed standards are aggressive and will require not only the provision of various new technologies, but also a transition of the fleet. This transition requires additional

flexibilities for limited-line manufacturers with fewer vehicles and lower-volumes able to be transitioned in the shorter term.

Second, the program eliminates the traditional compliance alternative available to limited-line manufacturers in the CAFE program. Companies that have previously met their obligations through monetary payment in order to continue to offer substantially advanced vehicles must transition to a new regulatory regime in which that option is no longer available.

Third, the TLAAS helps to provide leeway for industry leaders such as DAG to continue to pioneer advanced technologies, such as fuel cell and full battery electric vehicles, while simultaneously meeting the aggressive standards applicable to their lower-volume fleets. As such, the TLAAS continues to facilitate the development of new technology.

Fourth, recognizing that the companies entitled to the TLAAS have also been technology leaders, the TLAAS promotes further public acceptance of new powertrains and furthers the commercialization of new vehicle types. This is particularly significant since DAG's consumer base (like that of similarly situated companies) is often more able and more willing to try new technology – and especially new vehicle technologies – than the majority of the public.

Finally, the benefits far outweigh the costs. EPA's own data confirms that any adverse environmental impact from these lead-time provisions will be negligible. The agency estimates that the maximum potential impact of the TLAAS is for GHG emissions to increase by no more than 0.4% over the lifetime of the affected vehicles. Yet, by encouraging the further commercialization of more advanced powertrains during the same time frame, the longer term GHG benefits are substantial. See Bluewater Network, 372 F.3d at 412. [OAR-2009-0472-7193.2, p.5]

[Mercedes-Benz also submitted these comments as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 51-52.]

Alliance of Automobile Manufacturers (Alliance)

In general the Alliance supports all aspects of the flexibilities that EPA has proposed for compliance, including the provisions of the Temporary Lead-time Allowance Alternative Standards (TLAAS). Some Alliance member companies intend to file separate comments regarding additional flexibilities beyond TLAAS for very small volume manufacturers (below 100.000 units/year). [OAR-2009-0472-6952.1, p.8]

Volkswagen Group of America (Volkswagen)

An important aspect of the EPA proposal is the EPA's Temporary Lead-time Allowance Alternative Standard (TLAAS) fleet. Volkswagen supports this concept and believes the Administration and the EPA realized that some manufacturers may need additional time and flexibility to adjust their product plans to a new regulation administered under the Clean Air Act. The TLAAS provision will allow smaller vehicle manufacturers that have paid CAFE fines in the past or smaller manufacturers with a limited product line additional time and flexibility to

prepare for a new era of fuel economy and GHG control. We support the EPA and the White House efforts to create a fair and balanced transitional period that allows all manufacturers the ability to react to these very challenging and historic proposed regulations. [OAR-2009-0472-7210.1, p.3]

[[Volkswagen also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, p. 113.]]

With regards to the additional restrictions the EPA has applied to the TLAAS pathway, Volkswagen believes that these restrictions are contrary to the concept of providing flexibility to the regulation for smaller volume automakers. The EPA has proposed that manufacturers choosing to utilize the TLAAS provision can only do so if all existing banked credit is transferred within the manufacturer's fleets to minimize debits and all banked credit available within the manufacturer's fleet is exhausted. Volkswagen does not believe that the restrictions are necessary. Our understanding is that the EPA already accounted for the GHG impact of the TLAAS fleet assuming that all manufacturers that qualified for the provision utilized it to the maximum extent possible. It is also our understanding that the air quality impact is negligible even if the TLAAS provision is fully utilized by all manufacturers qualified to use it. Per the EPA's calculation cited on page 49522 of the notice, if every manufacturer eligible for the TLAAS utilized the option to the fullest extent, the increase on the total fleet GHG emissions is less that 0.4 percent. Due to this small impact we do not see the need to place additional restrictions on the use of a potential TLAAS fleet. [OAR-2009-0472-7210.1, p.3]

Toyota Motor North America

Toyota understands that additional lead time through relaxed standards may be necessary for the unique circumstances described in the proposal. To ensure the provisions are limited to the intended purpose and to avoid potential gaming, Toyota agrees that robust conditions and restrictions must govern access to and continued use of the program. In particular, Toyota fully supports the requirement that all credits must be exhausted before entering the TLAAS program and that credits may not be banked while participating in the program. The ability to participate in the program while having a positive credit balance would indicate the TLAAS provision is unnecessary. To ensure a level playing field, it is critical that the TLAAS program encourages the proper investment in CO_2 compliance technologies and a timely exit from the program. [OAR-2009-0472-7291, p.32]

BMW of North America, LLC (BMW)

BMW sells neither pickup trucks nor lightweight large-wheelbase vehicles that receive special flexibility in the calculation method and curves. Based on a projection of the composition of BMW's fleet in model year 2016, EPA estimates using the footprint-based calculation that BMW's fleet average will need to meet a nearly 4% more stringent fleet standard than the projected combined US fleet average of 250 grams CO_2 /mile. At an average 4% reduction per year for the US fleet, this means BMW will have to meet an extra year's worth of reductions by 2016. Other limited-line manufacturers are in the same situation. Therefore, the greenhouse gas

and CAFE compliance options for flexibility outlined in this proposal are, in our view, essential to the successful and fair implementation of a national program. [OAR-2009-0472-7145.1, p.5]

In particular, the proposed optional temporary lead-time allowance alternative standards that would be available in model years 2012-2015 for auto manufacturers such as BMW with model year 2009 U.S. vehicle sales of less than 400,000 is a fair option for manufacturers who sell 'feature-dense' vehicles and no pickup trucks. Furthermore, it will be limited to a maximum of 100,000 vehicles total for 4 years, and ends in model year 2015, before the most stringent target year of 2016. This flexibility is needed because most of the companies with limited lines will have to meet a more stringent fleet standard by 2016 than full-line manufacturers. [OAR-2009-0472-7145.1, p.5]

[BMW of North America also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 133-135.]

Now, TLAAS may seem unusual to some, but it must be remembered that many of the companies with limited lines will have to meet a more stringent fleet standard by 2016 than full line manufacturers. TLAAS is so constructed and the other components of flexibility are so designed that no one gets a free ride. Every manufacturer contributes their fair share to the improvement. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 135.]

National Automobile Dealers Association (NADA)

The proposed TLAAS provides additional compliance lead time for certain manufacturers that historically may have paid penalties in lieu of compliance under CAFE. The necessity for TLAAS demonstrates the folly of trying to regulate fuel economy under the CAA, a statute that was not designed for that purpose. Since, as is discussed below, the CAA's mobile source penalty structure is particularly ill-suited for fuel economy regulation, the TLAAS was devised to avoid driving certain automakers out of the U.S. market. Importantly, manufacturers who will qualify for this program are committed to continuous fuel economy improvements, but tend to be narrow line manufacturers with generally heavier and more powerful vehicles. [OAR-2009-0472-7182.1, p.7]

[National Automobile Dealers Association also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 88-89]

Society of Motor Manufacturers and Traders Limited

The proposed temporary lead-time alternative allowance standard and small entity conditional exemption will not, in their proposed format, offer a suitable solution for UK based niche and small volume manufacturers. SMMT fully expects its individual members to be making more detailed submissions to EPA/NHTSA to set out some possible solutions. SMMT hopes that these can be developed by the stakeholders to ensure challenging yet achievable long term targets for manufacturers can be set. [OAR-2009-0472-7229.1, p.1]

Within the EPA/NHTSA proposal the 'Temporary Lead-time Alternative Allowance Standard' (TLAAS) to 2016 is welcome. This allows manufacturers selling less than 400,000 cars to apply for a target of 125% of proposed industry-wide footprint target level. However, due to the high initial target faced by UK niche/SVMs this flexibility is insufficient to enable them to comply with the standard. The benefit of TLAAS to niche manufacturers is also limited by the 100,000 volume cap on eligible vehicles, compelling such manufacturers to use their 100,000 allowance in the early years of the rule, thus increasing the shortfall in later years. SMMT would therefore support an increase in this cap to 200,000 over the same period. In addition, the unrealistically high footprint based target for niche manufacturers would remain unachievable once the benefit of the TLAAS has ended. SMMT would therefore support an extension in the provision of the TLAAS or an equivalent for a further period to be agreed with the regulatory authorities. [OAR-2009-0472-7229.1, pp.3-4]

An alternative approach to provide additional flexibilities for niche manufacturers would be to adopt a similar mechanism to the EU CO_2 legislation within the existing TLAAS provision. SMMT would support such a provision, providing an alternative CO_2 reduction target for manufacturers who utilize the TLAAS but may still need additional flexibility to comply. Such a target would exceed the estimated industry average reduction requirement of 22% but be lower than the fleet based target faced by qualifying manufacturers. This target could be available for manufacturers responsible for fewer than 100,000 new Passenger Car and Light Duty Truck sales in the US per model year in order to minimize the impact on the overall US car fleet. [OAR-2009-0472-7229.1, p.4]

The proposed TLAAS allowance is also only available to vehicle manufacturers with vehicles for sale in MY 2009. Some SVMs are not currently selling into the US market, in part due to the current economic climate. They would therefore be excluded from being able to use the TLAAS in future. [OAR-2009-0472-7229.1, p.4]

Porsche Cars North America, Inc

Unlike the situation with CAFE where a manufacturer has the ability to pay a CAFE penalty for failure to comply with the fleet average requirement, this is not the case with the C02 rule proposed by EPA. As discussed in the NPRM, if a manufacturer does not meet the fleet average standard and the manufacturer is unable to acquire credits to offset its debits, then the manufacturer will likely pay civil penalties and certificates for vehicles in production or already sold with be voided. Absent credits, some modification to the credit program, deficit reduction measures, or an alternative standard, the imposition of these enforcement measures will almost certainly force Porsche out of the U.S. market. There is simply no business case to support buying back vehicles or paying large civil penalties. And since the footprint approach makes compliance not feasible for many years, we would anticipate a ratcheting up of the civil penalties to a point where in a short period of time they could be far larger than any profit associated with selling the vehicle. As a result, we believe that the rule as proposed, absent some modification to the rule or a merger with a larger multi-line manufacturer, we would be forced us out of the market. Based on today's numbers, this could result in the closure of 86 standalone Porsche dealers who employ 4,049 persons. It could also negatively impact another 115 dualed dealers who employ 9,933 persons. Two hundred fifty plus persons employed by Porsche Cars North

America, Inc. would also lose their jobs. Port jobs and shipping jobs would also be lost. These are the direct job losses that could be expected. There are certainly many more indirect supplier-related jobs linked to Porsche both in the U.S. and abroad that would be lost as well. [OAR-2009-0472-7431.1, pp.8-9]

First, for small limited-line manufacturers like Porsche, the required cumulative percent improvement relative to a manufacturer's current baseline performance should not exceed the annual percent improvement which the agencies' are using to establish standards for larger multiline manufacturers. In other words, if EPA and DOT finalize standards based on a goal of improving fuel economy annually by 5%, the percent improvement required of small niche limited-line manufacturers like Porsche should then also not exceed the 5% per year improvement which EPA and DOT believe to be the maximum feasible improvement practicable. Hence, for the 2012MY to 2016MY period, relative to our current baseline performance, the improvement required of small niche limited-line manufacturers like Porsche should not exceed 25% (5% times five model years). This limit would serve to correct for the fact that the assumed relationship of FE/C02 vs. footprint does not work well for our sports car-based passenger car fleet, and importantly, the limit would not reduce the burden on Porsche in a way that is inconsistent with the goal of the regulation.

Second, as an alternative to the modification above, we would recommend that EPA modify the proposed Temporary Lead-time Allowance Alternative Standards (TLAAS) provision by establishing standards for small limited line manufacturers that are consistent with the 5% per year limit. Given that it is EPA's intention to eventually establish standards through the 2020 model year, we recommend that the TLAAS provision be made available until that time.

Third, EPA should modify the credit program so as to provide manufacturers greater certainty that credits will actually be available. Because our competitors are unlikely to help us stay in the market by selling us credits, we recommend that EPA modify the rule to specify that manufacturers' expiring credits, which would otherwise be worthless, be sent to an EPA credit pool account for acquisition by those companies with deficits. We would recommend that manufacturers tasked with implementing the largest percent improvements be given priority in acquiring credits from this account. Manufacturers with credit balances should not be permitted to use this pool to acquire additional credits. Also, to assist manufacturers in future compliance planning, EPA/DOT should publish annual reports online showing the credit/deficit balances for each manufacturer. [OAR-2009-0472-7431.1, pp.9-11]

Center for Biological Diversity

The Agencies propose an exception that would provide for an *additional* temporary leadtime allowance for manufacturers that produce less than 400,000 vehicle sales per year and make "high performance" vehicles with high CO_2 emissions, but sell no high mileage cars against which to balance those emissions. Proposed Rule, 74 Fed. Reg. 49483.[20] No such exception is allowed under either EPCA or the Clean Air Act. Moreover, it would reward manufacturers flouting the rules while penalizing those that have complied and indeed surpassed past standards. In addition, such manufacturers have other options: they could begin to offer vehicles that truly are "high performance" in terms of fuel efficiency; they could "decreas[e] the mass of the

vehicles and/or decreas[e] the power output of the engines," 74 Fed. Reg. 49554; they could purchase credits from other manufacturers; or they could take advantage of "off-cycle technical credits" the Agencies intend to introduce – i.e., those that improve fuel efficiency but are not captured by current testing methodologies, such as solar panels, adaptive cruise control, or active aerodynamics. In short, this proposal is bad public policy, unnecessary, and illegal. [OAR-2009-0472-7265.1, p. 15]

Public Citizen and Safe Climate Campaign

EPA proposes to allow all but the six largest manufacturers to create a separate averaging fleet for up to a total of 100,000 vehicles for model years 2012-2015. Currently, the six largest manufacturers are Toyota, GM, Ford, Honda, Chrysler and Nissan, meaning that manufacturers like BMW and Daimler are given this dispensation even though they produce 400,000 vehicles per year. Companies like BMW and Daimler, who pride themselves on being technologically advanced, should be subject to the same standards as Ford, GM, and Toyota. EPA explains that the purpose of providing additional lead time is to permit manufacturers who have traditionally met their CAFE obligations by paying fines to come into compliance with the greenhouse gas emissions program. The CAA does not have a mechanism for manufacturers to pay fines to come into compliance, and the CAA penalties are much steeper than the CAFE fines. [OAR-2009-0472-7050.1, p.7]

We urge the EPA to retain its position on trading from a company's special averaging fleet to it's primarily fleet. If the agency does not explicitly prohibit such trades, it might create an incentive for manufacturers to take advantage of the TLAAS system to generate additional credits. [OAR-2009-0472-7050.1, p.7]

Union of Concerned Scientists

While consumers and the environment would be better off if all automakers had to meet EPA's standards on the same schedule, we acknowledge the EPA's rationale for this allowance because its effect will be to phase out NHTSA's system of fines that allow some manufacturers to pay to avoid meeting fuel economy standards. Manufacturers that have previously relied on the payment of fines as a regulatory compliance option no longer have that option under the Clean Air Act, and limited interim year leniency at the level proposed will help transition those manufacturers to the more stringent system. That said, in order to prevent this flexibility from becoming simply another loophole eroding energy and emissions savings, it is critical that the temporary lead-time allowance alternative standards be kept at the proposed levels and, further, kept as a temporary measure. This is a transition mechanism that will allow certain manufacturers to shift from one form of compliance to another; broadening the scope of these [OAR-2009-0472-7181.1, p.11] allowances or extending their use beyond this period would undermine the goal of assisting in a swift transition to adoption of clean technologies. [OAR-2009-0472-7181.1, p.12]

Additionally, with respect to EPA's proposal to restrict the use of banking and trading between companies of credits in the primary program in years in which the TLAAS is being used, UCS concurs and supports such a restriction. [OAR-2009-0472-7181.1, p.12]

American Council for an Energy Efficient Economy

The Temporary Lead Time Allowance Alternative Standards (TLAAS) should be eliminated, or at least more carefully tailored to meet the needs of low-volume manufacturers. The suggested sales cutoff of 400,000 is too high and allows certain manufacturers that fall just below that cutoff to shirk their fuel economy and GHG reduction responsibilities. It also discriminates against U.S. manufacturers by providing luxury European manufacturers with more lead time to adapt to new fuel economy and GHG standards. These manufacturers face ambitious GHG reduction standards in their primary (EU) markets, and permitting them to delay their responses to new standards on either side of the Atlantic will not serve any parties well.

ACEEE's estimates of possible per-vehicle emissions increases resulting from the TLAAS start at 2.4 grams per mile in 2012 and decline to 0.5 grams per mile in 2016. These figures are very close to the Upper Bound Scenario provided by EPA (DRIA p.5-43). EPA estimates that the actual values will be only 15-20 percent of these upper bounds, but it is unclear how the agency arrived at those estimates.

Recommendations: 1. Exclude the TLAAS from the final rule. 2. If the TLAAS are included, reevaluate the criteria for eligibility and ensure that no extension of the program occurs in future rulemakings. EPA should also justify its estimate of the likely impact of the alternative standards.

[ACEEE also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 139-140.]

Sierra Club

Under the Clean Air Act, automakers will no longer be able to pay fines as a compliance option. EPA's proposal for Temporary Lead-time Allowance Alternative (TLAA) Standards, if included in the final rule, should contain the limitations in the proposed rule and EPA should be clear that TLAA Standards are temporary and will not be revived in standards beyond 2016. Many automakers who stand to benefit from this program already meet more stringent standards in the European Union. We support the EPA proposal to restrict the use of banking and trading of credits between companies in the primary program during the TLAA Standards timeframe. [OAR-2009-0472-7278.1, p.15]

New York State Department of Environmental Conservation

EPA proposes an interim program for intermediate volume manufacturers, the Temporary Lead-time Allowance Alternative Standards, which allows some vehicles to be certified to a significantly less stringent standard: Manufacturers making use of these provisions [OAR-2009-0472-7454, p.1] should not be accumulating credit balances else where in the model years in which they are utilizing the Temporary Lead-time Allowance Alternative Standards. [OAR-2009-0472-7454, p.2]

Mass Comment Campaign (2,332) (unknown organization)

The 'luxury loophole' for small volume manufacturers must not become a boon to manufacturers currently meeting or exceeding standards. Any manufacturer taking advantage of extra lead time must be barred from trading credits. [OAR-2009-0472-5747, p.1]

Pendleton, Tom

The proposed rules provide that automakers that sell fewer than 400,000 vehicles in the United States would be allowed to meet a weaker standard to keep per-unit costs down. This group includes Mercedes-Benz, BMW, Volkswagen and Subaru.

Mercedes Benz should NOT be eliminated from this standard as they also have a diesel powered high mileage vehicle in their "A" series that should do well here. Subaru could also easily meet the new standards even if forced to do so by bouncing the Tribeca and improving the remainder of the fleet. BMW and VW both have high mileage diesels and should also be forced to adhere to the new standards...

The BMW, Ford, Mercedes-Benz, Subaru and VW companies operate in the EU with those strict standards so why can't they do the same here in the USA? Is this political gamesmanship or something uglier? [OAR-2009-0472-2094, pp. 2-3]

EPA Response:

Base TLAAS Program

After carefully considering the public comments, EPA continues to believe that the TLAAS program is essential in providing necessary lead time and flexibility to eligible manufacturers in the early years of the standards. First, EPA believes that it is acting well within its legal authority in adopting the various TLAAS provisions. EPA is required to provide sufficient lead time for industry as a whole for standards under section 202 (a) (1), which mandates that standards are to take effect only "after providing such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period." Thus, although section 202 (a)(1) does not explicitly authorize this or any other specific lead time provision, it affords ample leeway for EPA to craft provisions designed to provide adequate lead time, and to tailor those provisions as appropriate. See Husqvarna AB v. EPA, 254 F. 3d 195, 202 (D.C. Cir. 2001) (upholding provisions adopted under section 213 (b) (a provision worded nearly identically to section 201 (a) (2) with respect to consideration of cost and lead time) which allowed for additional lead time for manufacturers with smaller production levels). The types of technology penetrations required for TLAAS-eligible vehicles in the program's earlier years raise critical issues as to adequacy of lead time. As discussed in the EPA feasibility analysis provided in preamble section III.D.6 and III.D.7, several manufacturers eligible for TLAAS are projected to face a compliance shortfall in MY2016 without the TLAAS program. This is projected to occur even with the full application of technologies assumed by the OMEGA Model, including hybrid use of up to 15 percent. These manufacturers include BMW, Daimler, Jaguar Land Rover, Porsche, and Volkswagen In addition, the smaller volume manufacturers of this group (i.e., Jaguar Land Rover and Porsche) face the greatest shortfall (see preamble Table III.D.6-4). Even

with TLAAS, these manufacturers will need to take technology steps above and beyond those of other manufacturers to comply with standards. These manufacturers have relatively few models with high baseline emissions and this flexibility allows them additional lead time to adapt to a longer term strategy of meeting the final standards within their vehicle redesign cycles. Also, for CAFE, they have paid fines occasionally, and therefore have greater emissions reductions to achieve in order to comply with standards.

Second, EPA has carefully evaluated other means that eligible manufacturers can use to meet the standards, such as utilizing available credit opportunities. Indeed, eligibility for the TLAAS, and for temporary deferral of regulation for very small volume manufacturers, is conditioned on first exhausting the various programmatic flexibilities including credit utilization. At the same time, a basic reason certain manufacturers are faced with special lead time difficulties is their inability to generate credits which can be then be averaged across their fleet because of limited product lines. And although purchasing credits is an option under the program, there are no guarantees that credits will be available. Historic practice in fact suggests that manufacturers do not sell credits to competitors. Although some of the smaller manufacturers covered by the TLAAS program may be in a position to obtain credits, they are not likely to be available for the TLAAS manufacturers across the board in the volume needed to comply without the TLAAS provisions. At the same time the TLAAS provisions have been structured such that any credits that do become available would need to be used before a manufacturer would turn to the more restricted and limiting TLAAS provisions.

As discussed in preamble Section III.C., off-cycle credits are available if manufacturers are able to employ new and innovative technologies not already in widespread use, which provide real-world emissions reductions not captured on the current test cycles. Further, these credits are eligible only for technologies that are newly introduced on just a few vehicle models, and are not yet in widespread use across the fleet. The magnitude of these credits are highly uncertain because they are based on new technologies, and EPA is not aware of any such technologies that would provide enough credits to bring these manufacturers into compliance without TLAAS lead time flexibility. Manufacturers first must develop these technologies and then demonstrate their emissions reductions capabilities, which will require lead time. Moreover, the technologies mentioned in the proposal which are the most likely to be eligible based on present knowledge, including solar panels and active aerodynamics, are likely to provide only small incremental emissions reductions.

We agree with the comment from Citizens for Biodiversity that reducing vehicle mass or power are potential methods for reducing emissions that should be employed by TLAAS-eligible manufacturers to help them meet standards. However, based on our assessment of the lead time needed for these manufacturers to comply with the standards, especially given their more limited product offerings and higher baseline emissions, we believe that additional time is needed for them to come into compliance. EPA can permissibly consider the TLAAS and other manufacturers' lead time, cost, and feasibility issues in developing the primary standards and has discretion in setting the overall stringency of the standards to account for these factors. Natural Resources Defense Council v. Thomas, 805 F. 2d 410, 421 (D.C. Cir. 1986) (even when implementing technology-forcing provisions of Title II, EPA may base standards on an industry-wide capability "taking into account the broad spectrum of technological capabilities as well as

cost and other factors" across the industry). EPA is not legally required to set standards that drive these manufacturers or their products out of the market, nor is EPA legally required to preserve a certain product line or vehicle characteristic. Instead, EPA has broad discretion under section 202(a)(1) to set standards that reasonably balance lead time needs across the industry as a whole and that consider vehicle availability. In this rulemaking, EPA has consistently emphasized the importance of obtaining very significant reductions in emissions of GHGs from the industry as a whole, and obtaining those reductions through regulatory approaches that avoid limiting the ability of manufacturers to provide model availability and choice for consumers. The primary mechanism to achieve this is the use of a footprint attribute curve in setting the increasingly stringent model year standards. The TLAAS provisions are a temporary and strictly limited modification to these attribute standards allowing the TLAAS manufacturers lead time to upgrade their product lines to meet the 2016 MY GHG standards. EPA has made a reasonable choice here to preserve the overall stringency of the program, and to afford increased flexibility in the program's early years to a limited class of vehicles to assure adequate lead time for all manufacturers to meet the strictest of the standards by MY 2016.

DAG comments that the TLAAS program also allows them and other smaller volume manufacturers to continue to pioneer advanced technologies, such as fuel cell and full battery electric vehicles, while simultaneously meeting the aggressive standards applicable to their lower-volume fleets. As such, the TLAAS continues to facilitate the development of new technology. EPA understands that some smaller volume manufacturers are developing advanced technologies to achieve future emissions reductions and the TLAAS program provides them with more time to continue with the development of technology.

EPA agrees with comments that the program should remain limited and temporary. Although EPA has added some limited additional flexibility and lead-time for manufacturers with annual sales below 50,000 vehicles, EPA has tailored the program as narrowly as possible to address lead-time concerns and the program will be phased-out by MY 2016 for most eligible manufacturers.

With regard to the 400,000 unit eligibility cut-point, ACEEE comments that the cut-point is too high and "allows certain manufacturers that fall just below that cutoff to shirk their fuel economy and GHG reduction responsibilities. It also discriminates against U.S. manufacturers by providing luxury European manufacturers with more lead time to adapt to new fuel economy and GHG standards." EPA continues to believe the 400,000 unit cut-point is appropriate and is retaining it. For reasons described above, manufacturers falling below this threshold need the additional lead-time provided by TLAAS. EPA reviewed the sales volumes of manufacturers over the last few years, and determined that manufacturers below this level typically fit the characteristics discussed above, and manufacturers above this level did not. Thus, EPA chose this level because it functionally identifies the group of manufacturers (i.e., manufacturers who have traditionally paid CAFE fines instead of complying with the CAFE fleet average, and as a result at least part of their vehicle production currently has significantly higher CO_2 and lower fuel economy levels than the industry average), recognizing that there is nothing intrinsic in the sales volume itself that warrants this allowance. EPA was not able to identify any other objective criteria that would more appropriately identify the manufacturers and vehicle fleets described above.

This approach seeks to balance the need to provide additional lead-time without reducing the environmental benefits of the proposed program. EPA believes that 100,000 units over four model years achieves an appropriate balance as the emissions impact is quite small, but does provide companies with some flexibility during MY 2012 – 2015. For example, for a manufacturer producing 400,000 vehicles per year, this would be a total of up to 100,000 vehicles out of a total production of up to 1.6 million vehicles over the four year period, or about 6 percent of total production. In addition, EPA has quantified the potential impact of the program (see RIA chapter 5A). As shown there, the likely impact of the program is less than a 1% loss of emission reductions (assuming feasibility in early model years for all manufacturers – an unlikely assumption) and less than 3% even assuming the unrealistic possibility of completely maximized use of the program. Given the very considerable issues relating to needed lead time for TLAAS-eligible manufacturers and these modest emission increases associated with the provision, EPA believes it a reasonable balance of considerations of technological feasibility and lead-time to provide the temporary allowance. See Sierra Club v. EPA, 325 F. 3d 374, 378 (D.C. Cir. 2003) (weighing of statutory factors of cost and lead time in determining stringency and phasing in of technology-forcing standards). EPA also notes that the provisions apply not only to European manufacturers but to all manufacturers below the eligibility cut-point.

In response to comments that certain TLAAS-eligible manufacturers could meet standards by selling diesels, EPA recognizes that diesels offer CO_2 emissions reductions. However, due to the high cost of diesel technology, EPA is not projecting significant market penetration for diesels. EPA also notes that diesel fuel has a higher carbon concentration than gasoline and so diesels are not as effective from a CO_2 stand-point as they are from a fuel economy perspective.

EPA does not agree with NADA comments that the "necessity for TLAAS demonstrates the folly of trying to regulate fuel economy under the CAA". The CAA provides broad discretion for EPA to consider the lead-time needed by manufacturers and the ability to provide additional flexibility as needed. Provisions are often included in CAA-based mobile source rulemaking to address lead-time issues and these provisions are tailored to the particular needs for the rule.

Additional Flexibility for Smaller Volume Manufacturers

EPA received extensive comments that the TLAAS program would not provide sufficient lead time and flexibility for companies with sales of significantly less than 400,000 vehicles. Jaguar Land Rover, which separated from Ford in 2008, commented that it sells products only in the middle and large vehicle segments and that its total product range remains significantly more limited in terms of segments in comparison with its main competitors which typically have approximately 75% of their passenger car fleet in the small and middle segments. Jaguar Land Rover also commented that it has already committed $1.3 billion of investment to reducing CO_2 from its vehicle fleet and that this investment is already delivering a range of technologies to improve the fuel economy and CO_2 performance of its existing vehicles. Jaguar Land Rover submitted confidential business information regarding their future product plans and emissions performance capabilities of their vehicles which documents their assertions.

Porsche commented that their passenger car footprint-based standard is the most stringent of any manufacturer and this, combined with their high baseline emissions level, means that it would need to reduce emissions by about 10 percent per year over the 2012 – 2016 time-frame. Porsche commented that such reductions were not feasible. They commented that their competitors will be able to continue to offer their full line of products because the competitors have a wider range of products with which to average. Porsche further commented that their product development cycles are longer than larger competitors. Porsche recommended for small limited line niche manufacturers that EPA require an annual 5 percent reduction in emissions from baseline up to a total reduction of 25 percent, or to modify the TLAAS program to require such reductions. Porsche noted that this percent reduction would be in line with the average emissions reductions required for larger manufacturers.

EPA also received comments from several very small volume manufacturers that, even with the TLAAS program, the proposed standards are not feasible for them, certainly not in the MY 2012-2016 MY time frame. These comments are addressed in Section 5.4.2

EPA carefully considered the comments of smaller volume manufacturers and believes additional lead time is needed. After assessing the issues raised by commenters, EPA believes there are two groups of manufacturers that need additional lead time. The first group includes manufacturers with annual U.S. sales of less than 5,000 vehicles per year. Comments regarding these small volume manufacturers are addressed in Section 5.4.2, below. The second group includes manufacturers with MY 2009 U.S. sales of less than 50,000 vehicles but above the 5,000 vehicle threshold being established for small volume manufacturers. EPA has selected a cut point of 50,000 vehicles in order to limit the additional flexibility to only the smaller manufacturers with much more limited product lines over which to average. EPA has tailored additional TLAAS flexibility for these manufacturers as narrowly as possible to provide additional lead time only as needed by these smaller manufacturers. We estimate that the TLAAS program, including the changes below, will result in a total decrease in overall emissions reductions of about one percent of the total projected GHG program emission benefits. The basis for these estimates is provided in RIA Chapter 5 Appendix A.

As discussed in the EPA feasibility analysis provided in section III.D.6 and III.D.7 of the preamble several manufacturers eligible for TLAAS are projected to face a compliance shortfall in MY2016 without the TLAAS program, even with the full application of technologies assumed by the OMEGA Model, including hybrid use of up to 15 percent. These include BMW, Daimler, Jaguar Land Rover, Porsche, and Volkswagen In addition, the smaller volume manufacturers of this group (i.e., Jaguar Land Rover and Porsche) face the greatest shortfall (see preamble Table III.D.6-4). Even with TLAAS, these manufacturers will need to take technology steps to comply with standards above and beyond those of other manufacturers. These manufacturers have relatively few models with high baseline emissions and this flexibility allows them additional lead time to adapt to a longer term strategy of meeting the final standards within their vehicle redesign cycles.

For some of the companies such as Jaguar Land-Rover and Porsche, the reduction from baseline CO_2 emissions required to meet the standards is clearly greater than for other TLAAS-eligible manufacturers (to say nothing of other manufacturers). Compared with other TLAAS-eligible

manufacturers, these companies also have more limited fleets across which to average the standards. These companies have only a few vehicle models all of a similar utility, and thus their averaging abilities are extremely limited posing lead time issues of greater severity than other TLAAS-eligible manufacturers. In addition, with fewer models with which to average, there is a higher likelihood that phase-in requirements may conflict with normal product redesign cycles. EPA's feasibility analysis provided in preamble Section III.D. shows that these companies face a compliance shortfall significantly greater than other TLAAS companies (see preamble Table III.D.6-4). .

Therefore, for manufacturers with MY2009 U.S. sales of less than 50,000 vehicles, EPA is finalizing additional TLAAS compliance flexibility through model year 2016. These manufacturers will be allowed to place up to 200,000 vehicles in the TLAAS program in MY2012-2015 and an additional 50,000 vehicles in MY2016. To be eligible for the additional allotment above the base TLAAS level of 100,000 vehicles, manufacturers must demonstrate each year that they have diligently make a good faith effort to purchase credits from other manufacturers in order to comply with the base TLAAS program, but that sufficient credits were not available. Manufacturers must secure credits to the extent they are reasonably available from other manufacturers to offset the difference between their emissions reductions obligations under the base TLAAS program and the expanded TLAAS program. Manufacturers must document their efforts to purchase credits as part of their end of year compliance report. All other aspects of the TLAAS program, including the 1.25x adjustment to the standards and the credits provision restrictions, remain the same as described above for the same reasons. This will still require the manufacturers to reduce emissions significantly in the 2012-2016 time-frame and to meet the final emissions standards in MY2017. The standards remain very challenging for these manufacturers but these additional provisions will allow them the necessary lead time for implementing their strategy for compliance with the final, most stringent standards.

The eligibility limit of 50,000 vehicles will be treated in a similar way as the 400,000 vehicle eligibility limit is treated, as described above. Manufacturers with model year 2009 U.S. sales of less than 50,000 vehicles are eligible for the expanded TLAAS flexibility. Manufacturers whose sales grow in later years above 50,000 vehicles without merger or acquisition will continue to be eligible for the expanded TLAAS program. However, manufacturers that exceed the 50,000 vehicle limit through mergers or acquisitions will not be eligible for the expanded TLAAS program in the model year following the merger or acquisition, but may continue to be eligible for the base TLAAS program if the MY2009 sales of the new company would have been below the 400,000 vehicle eligibility cut point. The use of TLAAS by all the entities within the company in years prior to the merger must be counted against the 100,000 vehicle limit of the base program. If the 100,000 vehicle limit has been exceeded, the company is no longer eligible for TLAAS.

Porsche commented that EPA should modify the credits program to provide manufacturers with greater certainty that credits will be available to purchase from other manufacturers. EPA is not finalizing any mechanisms that would compel manufacturers with credits to sell those credits to other manufacturers. It is not clear how to implement such mechanisms, but EPA will monitor the credits market, and EPA plans to make this type of information available to the public.

Please see Section 5.10.1 for EPA's full response to comments regarding data transparency and availability.

In response to smaller volume manufacturer lead-time concerns, EPA is modifying the TLAAS program to provide smaller manufacturers with more lead-time, as noted above.

Credit Restrictions

EPA received several comments in support of the proposed credit restrictions for the TLAAS program including from Toyota, Public Citizen and Safe Climate Campaign, Union of Concerned Scientists, and Sierra Club. On the negative side, Volkswagen commented that the restrictions were not necessary, saying that the restrictions are counter to providing manufacturers with flexibility and that the emissions impacts estimated by EPA due to the full use of the program are small. However, EPA continues to believe that the restrictions are appropriate to prevent the potential gaming described below, and to ensure that the TLAAS program is used only by those manufacturers that have exhausted all other readily available compliance mechanisms and consequently have legitimate lead time issues.

EPA is thus finalizing a number of restrictions on credit trading within the TLAAS program, as proposed. EPA is concerned that if credit use in the TLAAS program were unrestricted, some manufacturers would be able to place relatively clean vehicles in the TLAAS fleet, and generate credits for the primary program fleet. First, credits generated under TLAAS may not be transferred or traded to the primary program. A consequence of this restriction is that any unused credits under TLAAS expire after model year 2015 (or 2016 for manufacturers with annual sales less than 50,000 vehicles). EPA believes that this is necessary to limit the program to situations where it is needed and to prevent the allowance from being inappropriately transferred to the long-term primary program where it is not needed.

Second, EPA is finalizing two additional restrictions on the use of TLAAS by requiring that for any of the 2012-2015 model years for which an eligible manufacturer would like to use the TLAAS, the manufacturer must use two of the available flexibilities in the GHG program first in order to try and comply with the primary standard before accessing the TLAAS -- i.e., TLAAS eligibility, which is premised on the need for additional lead time, is not available to those manufacturers with other readily-available means of compliance . Specifically, before using the TLAAS a manufacturer must: (1) use any banked emission credits from previous model years; and, (2) use any available credits from the companies' car or truck fleet for the specific model year (i.e., use credit transfer from cars to trucks or from trucks to cars). That is, before using the TLAAS for either the car fleet or the truck fleet, the company must make use of any available intra-manufacturer credit transfers first. Finally, EPA is restricting the use of banking and trading between companies of credits in the primary program in years in which the TLAAS is being used. No such restriction is in place for years when the TLAAS is not being used. EPA continues to believe this provision is necessary to prevent credits from being earned simply by removing some high-emitting vehicles from the primary fleet. Absent this restriction, manufacturers would be able to choose to use the TLAAS for these vehicles and also be able to earn credits under the primary program that could be banked or traded under the primary program without restriction.

Emissions Impact Calculations

ACEE expresses two concerns regarding EPA's analysis of emissions impacts associated with the TLAAS program: 1) that EPA did not provide documentation of the impact calculations for the TLAAS program, and 2) that EPA underestimated the impact of the program.

Regarding the first point, a detailed methodology of the impact calculations concerning TLAAS was made available in DRIA chapter 5, Appendix A. In this final rule, similar calculations are documented in RIA Chapter 5, Appendix A. As in the proposal, the calculations are also separately available in the docket, in a spreadsheet titled "Achieved CO_2 standards worksheet."

While ACEE provided contrasting estimates of TLAAS impacts, it did not provide its calculations. EPA disagrees with the commenter's estimates of the impacts from the TLAAS program, and is concerned that several errors may have been made. It appears that the commenter may have projected the TLAAS impacts ending in MY 2016, but in fact the TLAAS program, for most eligible manufacturers (those above 50,000 vehicle sales but below 400,000 sales) ends in 2015. Further, ACEE projected impacts that are near or above EPA's highly unlikely "upper bound scenario" where every eligible manufacturer is projected to fully utilize the TLAAS program for the full program allotment, and place its largest vehicles in the program (RIA Chapter 5A). This would require companies such as Porsche and BMW to sell specific vehicle models (such as the Boxster and Phantom) in unprecedented numbers.

EPA's analysis shows that even if the TLAAS program was fully utilized, the emission impacts are still slight relative to the overall benefits of the program. Further, EPA considers it highly unlikely that every manufacturer will utilize the full TLAAS program for each year which the manufacturer is eligible. Several manufacturers which are eligible for the TLAAS program currently produce vehicle fleets with fuel economy ratings which are higher than required by the MY 2008 or MY 2011 standards.

Further, utilizing the TLAAS program potentially offers several distinct disadvantages. The manufacturers with vehicles in the TLAAS program will need to be in compliance with the main program when the TLAAS program ends, and consequently need to be making continual progress toward meeting the MY2016 standard. Further, manufacturers utilizing the TLAAS program will be subject to several restrictions on credit banking and trading.

EPA therefore disagrees with the commenter on both points.

TLAAS Eligibility Comments

Organization: Association of International Automobile Manufacturers (AIAM)
Ford Motor Company
National Automobile Dealers Association (NADA)
Saab Automobile AB (Saab)
Volvo Car Corporation
Cummins Inc.

Comment:

Association of International Automobile Manufacturers (AIAM)

AIAM has one other serious concern with the TLAAS program as it is proposed by EPA. As proposed, "manufacturers with no U.S. sales in model year 2009 would not qualify for the . . . program." See 74 FR at 49523. This criterion is patently unfair to manufacturers which may decide to market vehicles in the U.S. in the future but did not do so in the 2009 MY. EPA should redefine the program to allow such manufacturers to qualify for this program. Additionally, any new SVMs entering the market should be treated similarly as SVMs currently marketing vehicles in the U.S. [OAR-2009-0472-7123.1, p.11]

[AIAM also submitted these comments as testimony at the Los Angeles public hearing. See docket LA EPA Hearing EPA-HQ-OAR-2009-0472-7283, pp. 28-32]

National Automobile Dealers Association (NADA)

The TLAAS should not be limited only to manufacturers with sales in the US in MY 2009. [OAR-2009-0472-7182.1, p.7]

Ford Motor Company

Temporary Lead-time Allowance Alternative Standards

EPA proposes to allow 'temporary lead-time allowance alternative standards' (TLAAS) for manufacturers who sell vehicles in the U.S. in MY 2009 whose vehicle sales in that model year are below 400,000 vehicles. According to the proposal, total sales of would be aggregated in the same manner as CAFE, and '[c]orporate ownership or control relationships would be based on determinations made under CAFE for model year 2009.' Based on our understanding of the preamble and the proposed rule at 86.1818-12(e) there would be a onetime determination of eligibility for TLAAS based on the relationships that exist in the 2009 model year.

A one-time determination of eligibility for TLAAS would base future regulatory obligations on a snapshot of the industry as it exists in the 2009 model year. It would not take into account the fact that corporate relationships in the auto industry are in flux, and will continue to change in the 2010 model year and beyond. To the extent that further changes in corporate relationships result in the creation or spin-off of new entities with vehicle sales below 400,000-unit cut-point prior to the 2016 model year, these entities should qualify for TLAAS as well. Such entities would have 'a limited line of vehicles' and be 'unable to take advantage of averaging emissions performance across a full line of production,' cited by EPA as the reasons for allowing TLAAS in the first place. To deny such entities access to TLAAS would be to place them at a regulatory disadvantage vis-a-vis their direct competitors. Likewise, a smaller-volume manufacturer that becomes part of a larger one should not continue to qualify for TLAAS. A more flexible provision is needed to allow for changes to the industry over time.

Ford has two recommendations here. First, the initial determination of eligibility for TLAAS should be based on corporate determinations for CAFE in the 2010 model year, not the 2009 model year. The GHG rules will not be final until approximately April 1 of 2010, when the 2010

model year is well underway and manufacturers will already be selling some 2011 model year vehicles. Corporate relationships that existed in the 2009 model year may already be outdated by the time these rules are finalized. Second, Ford recommends that qualification for the alternative standard should be reassessed in each model year subsequent to the 2010 model year based on control relationships in existence during each model year. A small manufacturer spun off from a larger one in 2010 should have the same compliance opportunities as any other small manufacturer. Likewise, if a small manufacturer becomes part of a larger one, it should not continue to qualify for a compliance option that other similarly-situated manufacturers cannot utilize. It may be appropriate to pro-rate the total of 100,000 vehicles that are subject to the new standards based on the total number of model years that the manufacturer is eligible for TLAAS. [OAR-2009-0472-7082.1, pp. 24-25]

Saab Automobile AB (Saab)

Saab appreciates that the EPA recognizes the difficulties of a lower volume limited line manufacturer in meeting the requirements of the proposed rule by providing the flexibility inherent in the Temporary Lead-Time Allowance Alternative Standards (TLAAS). Unfortunately due to the proposed definition of a TLASS "qualifying manufacturer", Saab would be excluded from utilizing the flexibility of this provision. [OAR-2009-0472-7103.1, p.1]

The proposal applies the definition to the 2009 model year, even though many manufacturing relationships will be radically different when the rule takes effect. For example, in the 2009 model year Saab was owned by General Motors (GM). Due to this ownership, Saab would be excluded as a TLAAS qualifying manufacturer. However, in February 2009 GM announced that it was selling or closing Saab by the end of the 2009 calendar year. That sale is nearing completion and when final will create a small fully independent Saab that under the proposed definition would still be excluded from utilizing the TLAAS. Following is Saab's recommendation:

In §86.1818-12 (e) (i) EPA proposed the definition of a qualifying manufacturer as: A qualifying manufacturer is a manufacturer with sales of 2009 model year combined passenger automobiles and light trucks in the United States of less than 400,000 vehicles, except that manufacturers with no U.S. sales in the 2009 model year do not qualify for the optional interim standards. [OAR-2009-0472-7103.1, p.1]

Saab recommends the following addition to §86.1818-12 (e) (i):

A qualifying manufacturer may include a manufacturer that during the 2009 model year was wholly owned by a large volume manufacturer and as a result of a change in corporate relationship reported to the NHTSA pursuant to 49 CFR Part 534, subsequently separated from the larger manufacturer before the end of calendar year 2010, provided that the branded sales of the smaller manufacturer for 2009 model year combined passenger automobiles and light trucks in the United States would have been less than 400,000 vehicles if said manufacturer sales were totaled separately. [OAR-2009-0472-7103.1, p.1]

This addition to the definition of qualifying manufacturer accommodates the extraordinary developments that have been occurring in the US automotive industry. By incorporating this addition, a more equitable application of the TLAAS will be possible while maintaining and strengthening its original intent. [OAR-2009-0472-7103.1, p.2]

Volvo Car Corporation

The discussion in the preamble further explains that "the total sales number applies at the corporate level, so if a corporation owns several vehicle brands the aggregate sales of the corporation would be used . . . In other words, corporations grouped together for purposes of meeting CAFE standards, would be grouped together for determining whether or not they are eligible under the 400,000 vehicle cut point." 1 Based on our understanding of the preamble, EPA's current assumption is that there would be a one-time determination of eligibility for TLAAS based on the corporate relationships and production volumes that exist in the 2009 model year. This approach is arbitrary and it is not consistent with either the stated purpose behind TLAAS, or the regulatory language proposed for codification at section 86.1818-12(e). As explained below under I. B, the proposed regulatory language can be reconciled with the purpose and intent behind TLAAS, even if EPA chooses not make appropriate clarifications, and in spite of the way EPA describes the criteria in the preamble.

A one-time determination of eligibility for TLAAS would base future regulatory obligations on a snapshot of the industry as it exists in the 2009 model year. It would not take into account the fact that corporate relationships in the auto industry are in flux, and will continue to change in the 2010 model year and beyond. To the extent that further changes in corporate relationships result in the creation or spin-off of new entities with vehicle sales below 400,000-unit cut-point prior to the 2016 model year, these entities should qualify for TLAAS as well. Such entities would have 'a limited line of vehicles' and be 'unable to take advantage of averaging emissions performance across a full line of production,' cited by EPA as the reasons for allowing TLAAS in the first place. To deny such entities access to TLAAS would place them at a regulatory disadvantage vis-à-vis their direct competitors.

VCC fits squarely within the categories of manufacturer that TLAAS was designed to address. EPA's proposal expressly recognizes the need for additional lead-time requirements for companies with fleets traditionally subject to CAFE penalties and/or companies with a limited line of vehicles unable to take advantage of averaging emissions performance across a full line of products. Consistent with the purposes of TLAAS, the allowance should be made available to manufacturers whose products have been sold in the U.S. but which have previously been aggregated into the fleet of a full-line, larger-volume manufacturer.

Access to TLAAS is especially appropriate for a newly independent company that has traditionally been a leader in bringing advanced safety technology to the market, like Volvo. Such access will allow VCC to continue that leadership while simultaneously working towards full compliance with the GHG program. TLAAS would not change VCC's responsibility to comply with the program on the same timeframe as other similarly sized manufacturers. Instead it would simply establish a standard for VCC that better reflects the composition of its fleet as a

stand-alone manufacturer and the fact that has previously been aggregated into a larger fleet with the other brands of its parent company.

EPA has also correctly recognized that the ability of a manufacturer to successfully implement new technologies necessary to meet increased emissions standards is proportional to the size a manufacturer's total annual production of vehicles. In light of this fact, it would be arbitrary and inappropriate to allow manufactures with 2009 sales of up to 400,000 vehicles to use TLAAS, while prohibiting significantly smaller volume producers like VCC from participating in the program. As noted above, VCC's recent annual U.S. sales of approximately 100,000 are only 25% of the maximum threshold for TLAAS.

The special circumstances of a newly independent manufacturer fall squarely within EPA's discretion under the Clean Air Act to consider and adjust appropriate lead-time allowances. See 42 U.S.C. § 7521(a)(2). Similar lead time provisions have been provided and upheld by the federal courts. See, e.g., Ethyl Corp. v. EPA, 541 F.2d 1

VCC recommends the following regarding TLAAS:

First, the initial determination of eligibility for TLAAS should be based on the actual corporate status and relationship in the calendar year in which the GHG regulations apply (2012-2016). Alternatively, at the very soonest, eligibility should be based on actual corporate status and relationships that exist in calendar year 2010, when the final regulations are adopted, not the 2009 model year as proposed. The GHG rules will not be final until approximately April 1 of 2010, when the 2010 model year is well underway and manufacturers will already be selling some 2011 model year vehicles. Corporate relationships that existed for the 2009 model year may already be completely outdated by the time these rules are finalized. As explained above, the arbitrary selection of model year 2009 would be especially harmful to VCC. Similarly, the initial fleet size determination should be based on the 2010 model year at the earliest, which will be the current model year at the time the final regulation is published, and not the 2009 model year as proposed.

Second, the qualification for the alternative standard should be reassessed in each model year subsequent to the 2010 model year based on control relationships in existence during each model year. A small manufacturer spun off from a larger one in 2010 should have the same compliance opportunities as any other small manufacturer. Likewise, if a small manufacturer becomes part of a larger one, it should not continue to qualify for a compliance option that other similarly-situated manufacturers cannot utilize.

Finally, EPA should clarify the regulations and preamble discussion to make it clear that manufacturers that meet the definition of "manufacturer" under the CAFE program qualify for TLAAS, regardless of whether their vehicles were aggregated with another manufacturer's fleet under the definition of "automobiles manufactured by a manufacturer." [OAR-2009-0472-7168.1, pp.2-6]

Cummins Inc.

Cummins supports the temporary lead time allowance alternative standards (TLAAS) proposed by EPA as a mechanism to provide lead time to certain manufacturers (e.g. small volume manufacturers with a very limited range of vehicles). The environmental impact of such provision is expected to be small and at the same time provides the necessary lead time for manufacturers to comply with strict GHG standards in the MY 2012-2016 timeframe. However, EPA is proposing that a manufacturer with no U.S. sales in MY 2009 does not qualify for TLAAS. Cummins strongly urges EPA to revise this proposal. New manufacturers entering the U.S. market are likely to have relatively small fleets (footprint range) and would face the same challenge as other existing small volume manufacturers with limited product line-up. Hence, it is reasonable to extend the TLAAS to new manufacturers. Such provision would support new manufacturers entering the market with promising GHG reduction technologies. [OAR-2009-0472-7205.1, p.5]

EPA Response:

EPA received several comments on its proposed approach of basing eligibility on MY2009, including comments that there are companies in the U.S. market are in the process of becoming independent and should be eligible and comments that companies entering the market later should be eligible. EPA also received comments that companies that are initially eligible should lose eligibility if they merge with larger companies

EPA understands the concerns raised by Volvo and Saab that basing eligibility strictly on MY2009 sales would be problematic for these companies, which are being spun-off from larger manufacturer in the MY2009 time frame due to the upheaval in the auto industry over the past few years. They offer a variety of suggestions including using MY2010 as the eligibility cut-off instead of MY2009, reassessing eligibility on a year-by-year basis as corporate relationships change, or allowing companies separated from a larger parent company by the end of 2010 to use their MY2009 branded U.S. sales to qualify for TLAAS. In response to these concerns, EPA recognizes that these companies currently being sold by larger manufacturer will share the same characteristics of the manufacturers for which the TLAAS program was designed and is needed. As newly independent companies, these firms will face the challenges of a narrower fleet of vehicles across which to average, and may potentially be in a situation, at least in the first few years, of paying fines under CAFE. Lead time concerns in the program's initial years are in fact particularly acute for these manufacturers since they will be newly independent, and thus would have even less of an opportunity to modify their vehicles to meet the standards. Therefore, EPA is finalizing an approach that allows manufacturers with U.S. "branded sales" in MY2009 under the umbrella of a larger manufacturer that become independent by the end of calendar year 2010 to use their MY2009 branded sales to qualify for TLAAS eligibility. In other words, a manufacturer will be eligible for TLAAS if it produced vehicles for the U.S. market in MY 2009, its branded sales of U.S. vehicles were less than 400,000 in MY2009 but whose vehicles were sold as part of a larger manufacturer, and it becomes independent by the end of calendar year 2010, if the new entity has sales below 400,000 vehicles. This approach is consistent with the recommendations provided by SAAB, and we believe addresses Volvo's concerns as well, and EPA believes it is a reasonable approach to addressing the issue.

EPA Response to Comments

EPA does not support comments from Ford, AIAM, NADA, and Cummins suggestion of a year-by-year eligibility determination because it opens up the TLAAS program to an unknown universe of potential eligible manufacturers, with the potential for gaming. Year-by-year eligibility determinations would open the program to post-2009 MY new entrants to the U.S. market, such EPA does not believe the TLAAS program should be available to new entrants since these manufacturers are not transitioning from the CAFE regime which allows fine paying as a means of compliance to a CAA regime which does not, and hence do not present the same types of lead time issues. Manufacturers entering the U.S. market for the first time thus will be fully subject to the GHG fleet-average standards.

Ford also commented that a smaller-volume manufacturer that becomes part of a larger one should not continue to qualify for TLAAS. EPA agrees with this comment. EPA recognizes the dynamic corporate restructuring occurring in the auto industry and believes it is important to structure additional provisions to ensure there is no ability to game the TLAAS provisions and to ensure no unintended loss of feasible environmental benefits. Therefore, EPA is finalizing a provision that if two or more TLAAS eligible companies are later merged, with one company having at least 50% or more ownership of the other, or if the companies are combined for the purposes of EPA certification and compliance, the TLAAS allotment is not additive. The merged company will only be allowed the allotment for what is considered the parent company under the new corporate structure. Further, if the newly formed company would have exceeded the 400,000 vehicle cut point based on combined MY2009 sales, the new entity is not eligible for TLAAS in the model year following the merger. EPA believes that such mergers and acquisitions would give the parent company additional opportunities to average across its fleet, eliminating one of the primary needs for the TLAAS program. This provision will not be retroactive and will not affect the TLAAS program in the year of the merger or for previous model years. EPA believes these additional provisions are essential to ensure the integrity of the TLAAS program by ensuring that it does not become available to large manufacturers through mergers and acquisitions.

Additional TLAAS Comments

Organization: Mitsubishi Motors R & D of America (MRDA)

Comment:

Limited line manufacturers specifically need additional lead-time and compliance flexibility, especially considering that Mitsubishi Motors was not subject to the California AB1493 GHG regulations until the MY 2016. [OAR-2009-0472-7125.1, p.1]

Mitsubishi Motors supports the Temporary Lead-time Allowance Alternative Standards (TLAAS) program to remedy the unique concerns of all limited line manufacturers. [OAR-2009-0472-7125.1, p.2]

Market fluctuations cause greater risk of noncompliance for limited line manufacturers. For instance, for a manufacturer with few models, what if consumer acceptance of a particular model is much lower than its projected sales? As explained to industry, the TLAAS program was

intended to help reduce limited line manufacturers' costs and burdens to meet the new GHG emissions standards. [OAR-2009-0472-7125.1, p.3]

EPA should craft the TLAAS program to be beneficial to all limited line manufacturers as indicated in the Notice of Intent (NOI). TLAAS as currently drafted has limited flexibility to account for unanticipated market fluctuations. As currently proposed, some limited line manufacturers will not use TLAAS and only Automakers who traditionally pay CAFE fines will use it. [OAR-2009-0472-7125.1, p.4]

TLAAS should accomplish two tasks:

1. Allow limited additional time for resource constrained, limited line manufacturers to cost effectively develop and produce low GHG emission vehicles to comply with the proposed standards, and

2. Provide some protection against market fluctuations [OAR-2009-0472-7125.1, p.4]

The NOI indicated that the TLAAS program would be available to manufacturers producing a specific number of vehicles, i.e. 400,000 in a predetermined MY, i.e. MY 2008 or MY 2009. The NPRM introduced new threshold criteria - eligible manufacturers must first demonstrate that they have tried to use banked or transferred credits and are still unable to meet the standard. [OAR-2009-0472-7125.1, p.4]

As written, TLAAS severely restricts the ability of limited line manufacturers to utilize the TLAAS program. Interpretation of the NPRM suggests that eligible manufacturers, prior to the start of a model year, must determine whether or not to participate in the TLAAS program. For example, due to market fluctuations, manufacturers committing to using the TLAAS program, in a year in which it is not actually needed, could result in the loss of credits. Alternatively, manufacturers committing to forgo the use of the TLAAS program may be subject to noncompliance due to market fluctuations. EPA should carefully review the regulatory language to clearly allow limited line manufacturers to "opt-in" or "opt-out" of the TLAAS program at the conclusion of the model year. [OAR-2009-0472-7125.1, p.4]

Another concern with the TLAAS program as described in the NPRM is the complete loss of credits in the primary fleet, i.e. the non-TLAAS fleet, whenever a manufacturer chooses to participate in the TLAAS program. This leaves limited line manufacturers again at significant risk of noncompliance from market fluctuations. Given this particular restriction on banking credits, the TLAAS program does not effectively provide relief to all limited lane manufacturers. [OAR-2009-0472-7125.1, p.4]

Mitsubishi Motors recommends that upon exiting the TLAAS program, Automakers should be allowed to carry forward only the primary fleet credits the Automaker earns in its last TLAAS program year. Given EPA's own estimates, the impact of the TLAAS program upon GHG reductions is minimal and will not impact the National Program's overall GHG reduction goals, and therefore should be allowed. [OAR-2009-0472-7125.1, p.4]

EPA Response to Comments

[The following comments are from LA Testimony, OAR-2009-0472-7283, pp.85-87]

Intermediate volume manufacturers like Mitsubishi face additional challenges in attaining these standards. Smaller companies have less financial resources and fewer vehicle lines to implement cost-effective major changes. This makes the credit flexibilities outlined in the NPRM very important, easing the transition to these new standards.

I remind you that this is especially important considering that Mitsubishi Motors was not subject to California AB 1493 regulations until the 2016 time frame. Therefore, one of the important methods to ease this transition is the temporary lead-time allowance EPA is proposing to help smaller manufacturers adapt to these new regulations.

EPA Response:

Mitsubishi commented that the program is restrictive due to the requirement that manufacturers must decide prior to the start of the model year whether or not and how to use the TLAAS program. EPA did not intend for manufactures to have to make this determination prior to the start of the model year. EPA expects that manufacturers will provide a best estimate of their plans to use the TLAAS program during certification based on projected model year sales, as part of their pre model year report projecting their overall plan for compliance (as required by §600.514-12 of the regulations). Manufacturer must determine the TLAAS program's actual use at the end of the model year during the process of demonstrating year-end compliance. EPA recognizes that depending on actual sales for a given model year, a manufacturer's use of TLAAS may change from the projections used in the pre-model year report. Also, manufacturers can make an annual decision on whether or not to use the TLAAS program for that year at the end of the model year.

For reasons discussed above in the previous response, EPA is retaining the credit restrictions regarding earning credits in the primary program during years that the TLAAS program is being used. Credits generated in the primary program in years that a manufacturer is using TLAAS may not be banked or traded. EPA continues to believe this provision is necessary to prevent credits from being earned simply by removing some high-emitting vehicles from the primary fleet.

Organization: Hyundai Motor Company
Kia Motors

Comment:

Hyundai Motor Company

Under the California greenhouse gas (GHG) program, Hyundai was exempt from the early years of the program due to our status as an intermediate volume manufacturer (IVM). EPA also provides a relief mechanism in its proposed GHG program, the TLAAS, to assist intermediate and smaller automakers in achieving the Federal standards. However, Hyundai is not eligible for relief through TLAAS. Despite the disparity in Hyundai's treatment between the California and

Federal programs, we do not seek parity with the relief we were afforded by California. As a fuel economy leader, Hyundai does not need special treatment. In addition, the use of a TLAAS-like provision would not be consistent with our overall corporate responsibility to address fuel efficiency, energy security and the environment. [OAR-2009-0472-7231.1, p.7]

Kia Motor Company

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, p.172]

On the subject of alternative standards, Kia does not expect to be eligible for the temporary lead-time allowance alternative standards as proposed in the EPA regulations. Although this does not provide us with the same relief afforded to us under the CARB regulations, we support the EPA proposal.

EPA Response:

EPA understands that the TLAAS program is structured differently than the California intermediate volume manufacturer provisions and that the commenters are not seeking harmonization. EPA appreciates the comments supporting the proposed approach.

Organization: Chrysler Group LLC (Chrysler)

Comment:

EPA proposes a 'temporary lead-time allowance alternative standard' ('TLAAS') to address situations where 'more lead time is needed, based on the level of emissions control technology and emissions control performance currently exhibited by certain vehicles.' EPA envisions that this program will provide the additional lead time necessary for certain manufacturers 'who have traditionally paid CAFE fines' or 'who have a limited line of vehicles and are unable to take advantage of averaging emissions performance across a full line of production.' While Chrysler supports the concept of this program, we disagree with its limitation to manufacturers with total 2009 model year U.S. sales of less than 400,000 vehicles. [NHTSA-2009-0059-0124, p.33]

Any loosening of the greenhouse gas standards for a limited number of manufacturers places the remaining manufacturers, the majority of which are domestic manufacturers, at an economic and competitive disadvantage, especially in the early program years where the proposed standards represent an extremely large passenger car efficiency increase from the 2011 model year CAFE standards. EPA notes that 'Porsche, Tata, Mazda, Mitsubishi, Suzuki, Daimler, Subaru, BMW, Volkswagen, Hyundai, and Kia' are potentially eligible for the TLAAS program. [NHTSA-2009-0059-0124, p.23]

All manufacturers will need to invest in greenhouse gas emission improvements; a competitive advantage is gained by those who are allowed additional time to make the necessary investments. The TLAAS program allows those eligible manufacturers, many of which are the most profitable in the U.S. market, to defer some investments to later model years, whereas larger manufacturers

must make the investments immediately to meet the aggressive 2012 and subsequent model year passenger car standards, immediately placing those manufacturers at an economic and competitive disadvantage. [NHTSA-2009-0059-0124, p.34]

Recommendation:

Chrysler recommends that the TLAAS program be expanded to all manufacturers. [NHTSA-2009-0059-0124, p.34]

An expansion of the TLAAS program to all manufacturers regardless of size will not result in a significant reduction in greenhouse gas benefits, but will remove the competitive inequity created by the program as currently proposed. The TLAAS program is very strictly proscribed to prevent a manufacturer who must use it from gaining greenhouse gas credit advantages by shifting a portion of their fleet to a lower standard. These measures will effectively limit the programs use to only those manufacturers who absolutely need the program to allow additional time to develop technologies to meet the normal standards. Given current economic conditions within the automotive industry including the recent bankruptcies of General Motors and Chrysler LLC, an expansion of the program to all manufacturers will level the playing field for larger manufacturers. [NHTSA-2009-0059-0124, p.34]

EPA Response:

EPA does not believe that it would be appropriate to allow large manufacturers to use the TLAAS program. EPA developed the wide range of flexibilities in the primary program with large full-line manufacturers in mind. Averaging, credit banking, and credit transfers, along with the opportunity to generate credits such as early credits and FFV credits, will provide full-line manufacturers with sufficient flexibility to transition to the new standards. Smaller volume manufacturers have less ability to use some of these flexibilities due to their narrow product lines. For example, averaging and credit transfers are less helpful to such manufacturers. In addition, as discussed in detail above, smaller volume manufacturers have higher baseline emissions and therefore must achieve larger reductions to meet emissions standards. Finally, if all manufacturers were allowed to use the TLAAS program, the stringency of the overall program would be significantly reduced and EPA would forego emissions reductions that are feasible and cost effective during the early years of the program.

5.4.2 Small Volume Manufacturer Provisions

Organization: Ferrari S.p.a
Aston Martin Lagonda
Association of International Automobile Manufacturers (AIAM)
Volkswagen Group of America (Volkswagen)
Vehicles Services Consulting, Inc
National Automobile Dealers Association (NADA)
Society of Motor Manufacturers and Traders Limited
Lotus Cars Ltd.

Koenigsegg Automotive AB
Lance Tunick
MD McLaren Automotive Ltd.
Morgan Motor Company Ltd.
Spyker Cars
KTM-Sportsmotoercycle AG
European Small Volume Car Manufacturers' Alliance (ESCA)
Artega Automobil GmbH & Co. KG
Wiesmann GmbH

Comment:

Ferrari S.p.a

For small-volume niche manufacturers there has never been a bigger challenge than this proposed rule. Without some further flexibility for such manufacturers it will be extremely difficult to continue to certify vehicles in U.S.A. in the future. In fact, taking into account the technical (and economic) infeasibility of achieving the proposed standards, even with the use of best availability technology that can be adopted in certain types of vehicles, along with the prerequisite of maintaining their distinctive characteristics (otherwise they cannot be sold) and the great uncertainty regarding the availability on the market of CO_2 credits for small-volume manufacturers, Ferrari feels that further flexibilities must be present in this rule. The EPA assumptions that small-volume manufacturers can comply with the proposed standards are based on an optimistic forecast. EPA should also consider a worst-case scenario where no credits will be available to offset debits. [OAR-2009-0472-7214.1, p.2]

Specific provisions for SVMs and small-volume test groups should be part of the future EPA GHG final rule, to be consistent with the EPA (and CARB) longstanding policy to guarantee more flexibility for such categories of manufacturers/vehicles on the grounds of technical feasibility, limited car lines, and negligible contribution to the annual GHG emissions, along with the gasoline consumed. Moreover it is well known that to comply with CO_2 standards is different to comply with criteria pollutants standards. [OAR-2009-0472-7214.1, p.5]

The category of small-volume manufacturers is clearly defined in both federal (EPA), California (ARB) regulations as well as in FMVSSs (NHTSA). SVMs are typically those that within the criteria you have mentioned are much smaller than intermediate or large manufacturers. The threshold of < 400,000 vehicle sold in U.S.A. in model year 2009 is two orders of magnitude larger than what the typical small-volume manufacturer produces. In any case, we kindly point out that you cannot consider that really small companies like Ferrari could solve the compliance problem with the same temporary allowance for very big companies (based on worldwide production, and U.S. sales). In other words, we deem not fair to give the same temporary allowance for manufacturers that belong to completely different categories. Both EPA and CARB have implemented rules with specific provisions for small-volume manufacturers. CARB makes further distinctions of manufacturer categories: Small, Independent-Low, Intermediate-Volume, and Large. [OAR-2009-0472-7214.1, p.6]

EPA Response to Comments

The Temporary Lead-time Allowance Alternative Standards (TLAAS) allows for up to a total of 100,000 vehicles in MYs 2012-2015 for manufacturers that sold less than 400,000 vehicles in U.S.A. in 2009 MY. This provision seems tailored for intermediate and large manufacturers. Small-volume manufacturers can use it as well, but it does not solve the problem for them because:

• the 25% higher standards is not sufficient, taking into account the achievable CO_2 level of certain kinds of vehicles, likewise high-performance sports cars; and
• the compliance problem for small vehicle companies is not temporary, but strictly related to vehicle characteristics that cannot be completely changed.

Consequently, it cannot be fixed only by adding more lead-time. Now it seems that EPA's position is that it is logical to offer the same temporary allowance of alternative standards for small and large companies. As noted in EPA's analysis, the above mentioned temporary alternative higher standards could be used by really large or even giant manufacturers, simply because they sold less than 400,000 vehicle in U.S.A. in 2009 MY. Such manufacturers have a wide range of different types of vehicles, with many different engines, transmissions and footprints. We do not oppose to temporary measures Docket No. EPA-HQ-OAR-2009-0472 and NHTSA-2009-0059 – NPRM GHG-CAFE MYs 2012-16 – Ferrari Comments. 7 for them, but we kindly request other more specific provisions for the well defined category of small-volume manufacturers. If all manufacturers eligible certify to these higher standards up to the max. 100,000 total sales during the first four model years of the rule, a few hundreds thousands vehicles could be certified with such higher stds. The related total increase of CO_2 emissions due to this allowance could correspond to the total CO_2 emissions of the entire small-volume manufacturer's fleets for several model years in U.S.A. [OAR-2009-0472-7214.1, p.6]

In summary, Ferrari supports the following specific provisions for small-volume manufacturers:

a) Specific CO_2 standards, based on the average value of the most recent model years of the vehicles certified by SVMs in U.S.A., and on the feasible improvements that can be reasonably achieved, using the best technologies that can be adopted, taking into account the need to keep the distinctive characteristics of the affected vehicles. b) The specific CO_2 standards should be defined not only for the first model years of the proposed rule, but beyond the 2016 MY, because the technical infeasibility to respect the general standards is related to the vehicle characteristics. Eventually, the standards could be revised after a certain period. They could be higher in the first model years (2012-2016) and reduced later.
c) Alternatively, instead of CO_2 standards equal for the category of small-volume manufacturers, EPA could define CO_2 standards tailored for each SVM, i.e. on a case-by-case basis. [OAR-2009-0472-7214.1, p.10]

There is some inconsistency in the A/C efficiency leaks and maximum allowed credits. We caution EPA that, even with the best solution that should be available to reduce both direct and indirect A/C system emissions, these contributes are not sufficient to comply for small-volume manufacturers, based on the present certification data. [OAR-2009-0472-7214.1, p.11]

Comments Submitted by Ferrari on 2/3/2010 via e-mail

Subject: Small Volume Manufacturer (SVM) Recommendations

Thank you for meeting with Ferrari SpA and Ferrari North America, Inc. representatives on January 25, 2010 to discuss the issue of treatment of Ferrari as a "Small Volume Manufacturer" (SVM) under the proposed GHG rules. Ferrari produces approximately 6000 vehicles per year worldwide. Ferrari's U.S. sales average about 1500 per year. As noted in previous comments submitted to EPA, Ferrari's operations are completely independent of any other vehicle manufacturer. Therefore, Ferrari believes it is critical to the company's survival to retain this status, as decided some time ago by EPA, CARB, NHTSA (Attached are two recent determinations NHTSA has made under the Safety Act regarding Ferrari vehicles). We also agree that a specific GHG standard should be set for Ferrari, as for other Small Volume Manufacturers. [Redacted text]

As a result of this set of problems, Ferrari has examined the existing EPA SVM regulations, as well as directives by the European Union, the text of EPCA, and California's A.B. 1493 regulations to determine an approach which could be implemented by EPA that would allow independent companies like Ferrari to remain in SVM status, while not having the unintended consequence of creating problems for other manufacturers. Ferrari believes a strict percentage ownership test does not fully recognize the independence of companies such as Ferrari from those who may have an ownership interest.

The existing EPA SVM regulations contain an aggregation of sales based primarily on a percentage ownership test. Ferrari proposes to keep this as a primary means, but to allow a manufacturer to apply to EPA to maintain (or establish) SVM status based on the independence of its R &D, testing, design and manufacturing from another firm that may have an ownership interest in the manufacturer. To establish this status, a manufacturer would need to present information to EPA that demonstrates that its R & D and design efforts, testing and manufacturing/production facilities are independent of another firm who may own an interest in the manufacturer.

In order to accomplish this, EPA could revise the existing 40 CFR 1838-01(b)(3) to read:

(3) Sales aggregation for related manufacturers Except as provided in (v), the projected or actual sales from different firms shall be aggregated in the following situations: ...

(v) Upon application by any firm, the Administrator may determine that such firm's sales shall not be aggregated with any other firm upon showing that it operates its research, development and design, testing and production facilities separately from any other firm.

As noted above, this approach is consistent with the European Union EC 443 / 2009 Article 11 approach, and is consistent with determinations NHTSA has made under the Safety Act. Further, it conforms with the structure in EPCA for small volume manufacturers contained in 49 USC 32902(d) and the definition in 49 USC 32901 (a)(4), which is based on control versus a percentage ownership test. Finally, California has chosen to defer the application of the A.B. 1493 GHG standards to small independent companies.

[Redacted text]

You had asked at the meeting for a number of vehicles that should be eligible for SVM status under the GHG rules. To retain a consistent approach with the European Union Directive and EPCA, Ferrari recommends a level of 10,000 vehicle sales per year (or a total of 30,000 per three consecutive years, which is current CARB practice) in the U.S. However, it also recommends that the 15,000 level be retained for other emission standards.

In the event a manufacturer's status should change due to altered circumstances, it is important that EPA provide some period during which that manufacturer can operate in the SVM status. An abrupt "light-switch" approach would cause huge disruption, and as noted above, could have serious unintended consequences for other manufacturers. Thus, a period of 5 years should be provided to allow both the SVM and any other manufacturer to accommodate this change in status.

Finally, you have asked for a level that should apply to Ferrari assuming it retains SVM status. Since this information will contain CBI, we will submit this to you under separate cover.

Thank you for working with Ferrari on a matter that is critical to its U.S. operations. Ferrari will be happy to respond to any questions you may have regarding this matter.

Ferrari also submitted confidential business information regarding their product plans and emissions reduction capabilities.

Aston Martin Lagonda

Aston Martin is an independent automotive manufacturer based in the UK, with a long history of specializing in the design and manufacture of high-end luxury sports cars. Aston Martin annual global volume prior to the economic downturn was circa 7,000 units (2007 calendar year), with exports forming approximately 75% of this output.

Aston Martin is committed to doing its fair share in reducing overall CO_2 emissions. We are committed to reducing our fleet CO_2 emissions and between 2000 and 2008 have achieved a fleet average reduction of circa 25%. For comparative purposes, this is approximately double the improvement found across the EU new car market over the same period. [OAR-2009-0472-7217.1, p.1]

It is the view of Aston Martin that the TLAAS does not provide sufficient lead times for SVMs and that EPA should defer SVM compliance with its GHG standards until MY 2016.2 EPA's usual policy is to allow SVMs to defer compliance with a new requirement until the end of a phase-in. See e.g. 40 CFR 1811-04. Under the proposed EPA CO_2 rule, the period 2012-2015 is analogous to a phase-in of the new GHG requirements, and accordingly, EPA should defer SVM compliance until after this period, i.e. until 2016 and later. [OAR-2009-0472-7217.1, p.3]

Aston Martin is committed to doing its fair share in reducing CO_2 emissions. As such, we support a consistent and harmonized national standard, whilst raising the issue that such a standard should promote diversity of the industry and maintain choice for the consumer.

Aston Martin recommends that Small Volume Manufacturers are deferred during the effective phase-in period (in line with the California SVM provisions), to allow sufficient time for product plans to be aligned with legislative requirements.

Aston Martin further recommends that the definition of a Small Volume Manufacturer, for the purposes of this legislation, is in accordance with the current EPA definition. The EPA definition of a Small Volume Manufacturer is one who sells fewer than 15,000 vehicles in all states and territories of the United States within a given model year. Aston Martin believes that a manufacturer with sales figures above this threshold could reasonably be expected to meet either the large volume requirements, or such requirements adjusted by the TLAAS allowance. Aston Martin further believes that the application of such a threshold based on vehicle sales within US territories and states represent the best determination for whether to classify a manufacturer for small volume allowances. Manufacturers who sell vehicles in other territories, which may have significantly differing regulatory requirements, are not necessarily better positioned to meet the legislative requirements of EPA and/or NHTSA.

Proposal in summary:

• SVM compliance starts at end of effective phase-in period

• SVM definition as per EPA legislation

• SVM compliance through parallel referral to the stricter CARB GHG rule (enabling challenging yet fair options for SVM compliance)

The joint EPA/NHTSA legislative proposal seeks to "achieve substantial reductions of greenhouse gas (GHG) emissions and improvements in fuel economy from the light-duty vehicle part of the transportation sector". Due to the particularly low volumes of vehicle involved, Aston Martin asserts that the above recommended amendments to the proposed regulations will not have any significant impact on the ability of such legislation to achieve these aims within the transportation sector. [OAR-2009-0472-7217.1, p.6]

Aston Martin also submitted confidential business information regarding their product plans and emissions reduction capabilities.

Association of International Automobile Manufacturers (AIAM)

The proposed greenhouse gas regulatory program makes accommodations for two groups of smaller manufacturers. For mid-sized companies (those with U.S. annual sales levels below 400,000 units), EPA has proposed "temporary lead-time allowance standards." EPA states that these alternative standards provide additional compliance lead-time for mid-sized manufacturers that offer narrow product lines in the U.S. Some of these companies have traditionally paid

CAFE civil penalties as an alternative to compliance, but would not be able to follow that approach under greenhouse gas standards. For these companies, EPA proposes to provide additional compliance lead-time for model years 2012-15. See proposed section 86.1818-12(e). EPA has also proposed to defer setting standards for entities that meet "small business" size criteria under U.S. Small Business Administration (SBA) regulations, 13 CFR 121.201. See proposed section 86.1801-12(j). The small business entities that would be exempted include two manufacturers, Saleen and Tesla, as well as independent commercial importers and alternative fuel vehicle converters. See preamble at 49745. For a manufacturer to qualify as a small business, it must have no more than 1000 employees. EPA justifies this exemption based on the minimal greenhouse gas emissions of these companies due to their very small volume. See, e.g., preamble at 49629. [OAR-2009-0472-7123.1, p.8]

There are a small number of manufacturers that fall between the two size categories addressed by EPA and for whom no relief is proposed by EPA. These companies produce a very limited number of models consisting entirely of luxury/high performance vehicles that, because of their essential features would not be able to meet greenhouse gas standards. Aston Martin and McLaren are examples of independent companies of this type. Ferrari and Maserati are independently operated companies that also fall into this category. These vehicles are very expensive, are sold in very small volumes, and are inherently unique and special high performance vehicles that typically accumulate few miles per year. As a result, their impact on total greenhouse gas emissions is negligible, as with the small business category. [OAR-2009-0472-7123.1, p.9]

While it is reasonable to project some improvement in greenhouse gas emissions for this category of vehicles, it is unrealistic to project that these vehicles could meet the generally applicable standards in the 2012-2016 period. While it is possible that these small volume manufacturers (SVMs) might be able to comply with greenhouse gas standards by purchasing credits from other manufacturers, this is far too speculative a solution. The market for credits is unpredictable at this point. Other than exiting the U.S. market, therefore, the only other possible solution for an independent SVM would be to sell an equity interest in the company to a larger, full-line manufacturer, so that the emissions of the luxury vehicles could be averaged in with the much larger volume of other vehicles produced by the major manufacturer, This cannot possibly be the outcome EPA intends, especially when measured against the minimal, if any, environmental benefit that would result. The proposed regulations recognize the acute difficulty which SVMs may face in complying with the fleet average emission and fuel economy requirements. In discussing the proposal for the Temporary Lead-Time Allowance Alternative Standards (TLAAS), EPA states:

Manufacturers with limited product lines may be especially challenged in the early years of the proposed program. Manufacturers with narrow product offerings may not be able to take full advantage of averaging or other program flexibilities due to the limited scope of the types of vehicles they sell. For example, some smaller volume manufacturers focus on high performance vehicles with higher CO_2 emissions, above the CO_2 emissions target for that vehicle footprint, but do not have other types of vehicles in their production mix with which to average. Often, these manufacturers pay fines under the CAFE program rather than meeting the applicable CAFE standard. See 74 FR at 49483. [OAR-2009-0472-7123.1, p.9]

AIAM believes that this assessment is correct and that either a more generous lead-time allowance or an alternative, relaxed standard would be the appropriate solution for these types of SVMs. [OAR-2009-0472-7123.1, p.9]

There is ample legal authority for EPA to provide SVMs a more generous lead-time allowance or an alternative standard. Indeed, EPA recognizes such authority in the proposal for a small entity deferment (for those companies defined under the Small Business Administration's regulations), see 74 FR at 49574, and in the TLAAS. These provisions are consistent with previous EPA rulemaking under the Clean Air Act which offer relief to SVMs. For example, in the Tier 2 program, EPA exempted SVMs from the phase-in requirements in the early model years of the emission exhaust and evaporative standards. See 40 C.F.R. § 86.1811-04(k)(5). In doing so, EPA correctly found that "phase-in schedules, in general, add little flexibility for manufacturers with limited product offerings because a manufacturer with only one or two test groups can not take full advantage of a 25/50/75/100 percent or similar phase in." See Control of Air Pollution From New Motor Vehicles: Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements; Final Rule, 65 FR 6698, 6743 (February 10, 2000). Accordingly, "[f]or manufacturers meeting EPA's definition of 'small volume manufacturer,' [EPA] proposed to exempt those manufacturers from the phase-in schedules and require them to simply comply with the final 100% compliance requirement." Id. Other agencies likewise offer such relief for SVMs that may face particular compliance hurdles on account of their size. See, e.g., Nat'l Highway Traffic Safety Administration, Early Warning Reporting Regulations, 74 FR 47740 (September 17, 2009) (creating a small manufacturer exemption where the underlying statute was silent on the availability of such exemption). It should also be noted that the NHTSA CAFE program and the California greenhouse gas standards program both provide relief for manufacturers in the size range in question, although the NHTSA program is statutorily mandated. In fact, the California standards exempt SVMs (and intermediate sized manufacturers) until the 2016 MY. There is also nothing in the Clean Air Act that would prevent EPA from providing an alternative and more relaxed emissions standard for SVMs. Section 202(a) does not require a one-size-fits-all standard that would be applicable to each and every manufacturer. Rather, that section requires EPA to set "standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines." 42 USC § 7521(a) (emphasis added). The statute does not restrict EPA's discretion in how the "classes of new motor vehicles" should be defined. [OAR-2009-0472-7123.1, pp.9-10]

While AIAM believes the correct approach is for EPA to set an alternative, relaxed standard for SVMs, we recognize that there is insufficient time available in this rulemaking proceeding between now and the final rule projected for completion by March 31, 2009, for EPA to collect the relevant product plans and technology feasibility information from SVMs, conduct the necessary reviews and modeling that may be needed, consult with the stakeholders, issue a supplemental proposal for an alternative, relaxed standard for SVMs for public comments, and then determine the appropriate final standard. Indeed, when California adopted its GHG vehicle standards in 2004 it recognized the difficulties in grouping all SVMs together and provided three compliance options for them. One California SVM compliance option is an alternative standard, but California, even then, recognized that lead-time would be needed to develop an alternative standard and provided for development of an SVM standard by 2012 for compliance in 2016.

Therefore, we believe it appropriate for EPA to defer decisions on the SVM alternative standard to the next rulemaking for the 2017+ MY. [OAR-2009-0472-7123.1, p.10]

For these reasons, AIAM recommends that EPA adopt the same approach for SVMs as it proposed for the small business entities. EPA should defer setting standards for these companies now, but should consider setting standards in a future proceeding. Conceptually, the future small volume standards should be set on a class basis for all vehicles produced by these companies. Such a standard could assure that these vehicles make a contribution to reducing overall greenhouse gas emissions, although their total emissions are extremely small. The nature of the small volume class standard should reflect the fundamental nature of the vehicles. AIAM also urges EPA to apply the definition of SVM used in the EPA current small volume certification program of less than 15,000 annual U.S. sales. See 40 CFR § 86.1838-01(b)(1)(i). [OAR-2009-0472-7123.1, p.10]

Volkswagen Group of America (Volkswagen)

An additional topic that could lend flexibility to the regulation is consideration of small volume test group or brands. EPA considered this possibility when it issued last year's ANPRM, 'Regulating GHG Emissions Under the Clean Air Act'. In an EPA document published June 23, 2008 entitled, 'Light-Duty Vehicle Greenhouse Gas (GHG) Certification and Compliance Program Options' (Karl Simon Memorandum - Docket 10 No. EPA-HQ-OAR-2008-0318), EPA discussed the possibility of allowing separate standards for a small volume of vehicles such as sports cars or exotic vehicles that do not have a large percentage of the market and have a small contribution to the GHG emission related to light duty vehicles. EPA ultimately concluded that the volume of vehicles allowed under the current small volume test provisions (15,000 vehicles) would result in a volume of vehicles not subject to fleet average standards that was excessive. The EPA also noted concern that a small volume test group provision could result in gaming by manufacturers. Volkswagen recommends that EPA revisit this concept and consider a permanent small volume of vehicles that are exempt from the fleet average approach and that comply with a fixed value. As noted in the Karl Simon Memorandum, the fixed standard would still ensure that even high performance exotic vehicles have a significant task to reduce GHG emissions. We believe the volume and gaming issues could be resolved by limiting the provision to existing small brands under the financial control of a parent company but with an independent business plan and independent styling and marketing functions. [OAR-2009-0472-7210.1, p.7]

Vehicles Services Consulting, Inc

This comment will address the proposed EPA GHG standard from the point of view of small volume automobile manufacturers (SVMs). The EPA proposal jeopardizes the stated goal of consumers having a full range of vehicle choice in that it endangers the ability of certain SVMs to sell into the US market. [OAR-2009-0472-7083.1, p.2]

As an initial matter, when VSCI uses the term “SVM”, we mean the definition of SVM as currently found in EPA’s regulations, that is, a company with fewer than 15,000 USA sales per year, calculated in accordance with EPA’s “10% related-company aggregation rule”. [OAR-2009-0472-7083.1, p.2]

EPA expressly solicited comment on the question of SVM lead-time. The proposal states:

'… EPA recognizes that [s]ome … companies … are significantly smaller niche firms, with sales volumes closer to 10,000 vehicles per year worldwide; an example of this type of firm is Aston Martin. EPA anticipates that there are a small number of such smaller volume manufacturers, which have claimed that they may face greater challenges in meeting the proposed standards due to their limited product lines across which to average. EPA requests comment on whether the proposed …program … provides sufficient lead-time for these smaller firms to incorporate the technology needed to comply with the proposed GHG standards." [OAR-2009-0472-7083.1, p.2]

EPA SHOULD DEFER SVM COMPLIANCE UNTIL AFTER MY 2016

EPA should defer SVM compliance with its GHG standards until after 2016.3 EPA's usual policy is to allow SVMs to defer compliance with a new requirement until the end of a phase-in. See e.g. 40 CFR 1811-04. Under the proposed EPA CO_2 rule, the period 2012-2016 is analogous to a phase-in of the new GHG requirements, and accordingly, EPA should defer SVM compliance until after this period, i.e. until 2017 and later. [OAR-2009-0472-7083.1, p.2]

EPA failed to include such an SVM deferral provision in its proposal. Rather, EPA proposed two provisions that addressed lead-time but failed to provide the needed SVM flexibility:

-First, EPA proposed a temporary lead-time allowance for manufacturers whose MY 2009 vehicle sales are below 400,000 vehicles. This 400,000 unit per year proposal is certainly not an SVM proposal, since EPA defines SVM as a company with fewer than 15,000 USA sales per year. See proposed regulation, section 86.1818-12(e). [OAR-2009-0472-7083.1, p.3]

-Second, EPA proposed a provision allowing a GHG exemption BUT ONLY FOR CERTAIN small businesses – those that meet the Small Business Administration (SBA) criteria contained in 13 CFR 121.201.6 With this limitation, however, the proposed exemption appears to apply only to USA companies. The "US only" limitation may be in violation of WTO requirements. In addition, the "small entity" provision is limited to auto manufacturers with fewer than 1000 employees – a criterion that is irrelevant to a manufacturer's ability to comply with emissions standards (whereas the factor historically determining SVM status – vehicle sales – does affect ability. [OAR-2009-0472-7083.1, pp.3-4]

SVMs Face Lead-Time Problems Meeting The Proposed Standards Due To Their Limited Product Lines Across Which To Average

EPA has acknowledged that SVMs face lead-time problems meeting the proposed standards due to their limited product lines across which to average. EPA stated:

Manufacturers with limited product lines may be especially challenged in the early years of the proposed program. Manufacturers with narrow product offerings may not be able to take full advantage of averaging or other program flexibilities due to the limited scope of the types of vehicles they sell. For example, some smaller volume manufacturers focus on high performance vehicles with higher CO_2 emissions, above the CO_2 emissions target for that vehicle footprint,

but do not have other types of vehicles in their production mix with which to average. Often, these manufacturers pay fines under the CAFE program rather than meeting the applicable CAFE standard. See 74 Fed. Reg. at 49,483. [OAR-2009-0472-7083.1, p.4]

The simple fact is that an SVM whose product line consists of a single type of vehicle (such as sports cars) simply is not in a position to have a diverse fleet which permits use of the averaging approach. [OAR-2009-0472-7083.1, p.4]

As recognized by California in its staff report supporting the California GHG rule, "low volume manufacturer offerings need to be preserved in the marketplace to ensure continued consumer choice of specialty vehicles. Given their more limited resources to make major revisions to their powertrains, it was also important to provide such manufacturers with greater lead time to make improvements to their products. In addition, staff needed to consider that major volume manufacturers could produce specialty offerings in direct competition with these smaller manufacturer offerings, but offset their potentially poorer GHG emission performance by making other easier to control cars in their fleet incrementally cleaner." See Exhibit 1. [OAR-2009-0472-7083.1, p.4]

Moreover, many SVMs are dependent on large manufacturers for their powertrains and since the large manufacturer can take advantage of averaging, an SVM is often unsure when the specific drivetrain that the SVM is using will in fact on its own meet a given requirement. In addition, because the new CO_2 requirements are challenging – a fact acknowledged in the proposal -- major engine technology suppliers will concentrate their efforts on working with large volume manufacturers, and, thus, SVMs will, at first, have limited access to advanced technology. Further complicating matters, because SVMs build so few vehicles, the costs of developing new engine systems compared to potential profits discourages suppliers from cooperating with SVMs. [OAR-2009-0472-7083.1, p.5]

Additional Reasons Why Deferral Of The SVM Compliance Date Is Appropriate

There are three additional reasons why deferral of the SVM compliance date is appropriate:

1. The proposed EPA enforcement mechanism would render illegal the vehicles of an SVM that could not comply with the CO_2 standard. This is a harsh penalty (as compared to the CAFÉ enforcement mechanism whereby fines are imposed). EPA has explained that the structure of the Clean Air Act mandates the enforcement scheme EPA proposed. Assuming this to be the case, the equitable solution is to defer SVM compliance to allow EPA and SVMs more time to identify a reasonable compliance strategy.

2. The effect on the environment from an SVM deferral date would be de minimis – the net increase in greenhouse gas emissions would be less than 0.1%. See Lotus Cars Limited analysis attached as Exhibit 2. The vehicles of SVMs are typically very expensive, sold in very small volumes, and are inherently unique and special high performance vehicles that typically accumulate few miles per year. As a result, their impact on total greenhouse gas emissions is negligible.

3. The proposal's credit provisions do not help SVMs during the period 2012- 2016. The credit provisions in EPA's proposal are illusory as regards SVMs during the period MY 2012-2016. EPA provided no explanation of how credits will be available for purchase during this period. Indeed, the whole reason for the EPA GHG proposal is that the national vehicle fleet is not sufficiently efficient, so it is difficult to understand how credits would be generated for use during the period MY2012-2016. [OAR-2009-0472-7083.1, p.5]

EPA SHOULD ALSO PROMULGATE AN SVM HARDSHIP PROVISION, THE SAME AS WHAT WAS PROMULGATED IN THE FEBRUARY 2000 EPA TIER 2 RULE

In its February 2000 Tier 2 rule, EPA included a hardship provision for SVMs (40 CFR 1811-04(q) which allowed, upon a showing of need, an extra year of lead-time on a case-by-case basis. EPA should adopt a similar provision in its GHG rule. [OAR-2009-0472-7083.1, p.6]

GHG AND SVMs FOR MY 2017 AND LATER: TWO POSSIBLE APPROACHES

Even with a deferral of the SVM GHG effective date until MY 2017, the question remains "what is the appropriate SVM GHG regulatory strategy after MY 2016?" [OAR-2009-0472-7083.1, p.6]

The EPA proposal of September 28, 2009 is at times described by the agencies as covering only MY 2012-2016. For example, the Federal Register notice states as follows: "This joint proposal covers passenger cars, light-duty-trucks, and medium-duty passenger vehicles built in model years 2012 through 2016. … [The agencies will have] a future rulemaking to address standards for model year 2017 and thereafter." [OAR-2009-0472-7083.1, p.6]

On the other hand, the preamble to the EPA proposed regulations also states: "The 2016 CO[2] standards would remain in place for 2017 and later model years, until revised by EPA in a future rulemaking." [OAR-2009-0472-7083.1, p.6]

Indeed, the proposed regulatory language in 40 CFR 86.1818-12 sets a GHG standard for "MY 2016 and later". [OAR-2009-0472-7083.1, p.7]

Taking the view that the EPA notice proposes to set GHG standards for the period after MY 2016, SVMs require one of two possible regulatory approaches to be included in the EPA final rule: either (1) finalize 40 CFR 1801-12(j) so that it applies to all SVMs, not just "small entities"; or (2) include an SVM "California Compliance Option" in the final rule. [OAR-2009-0472-7083.1, p.7] [[See Docket Number OAR-2009-0472-7083.1, pp.7-9 for a detailed discussion on the tow possible regulatory approaches mentioned above]]

National Automobile Dealers Association (NADA)

EPA also proposes to completely exempt manufacturers with less than 1000 employees. This proposed exemption should be replaced with one exempting all manufacturers with less than

15,000 annual U.S. vehicle sales. Note that CARB's fuel economy/GFIG rules regulate only some 6—7 automakers and exempt all others. [OAR-2009-0472-7182.1, p.7]

[National Automobile Dealers Association also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 88-89.]

Society of Motor Manufacturers and Traders Limited

SMMT is concerned that the proposed standards will be impossible for niche and small volume manufacturers to meet. These manufacturers represent approximately 0.5% of US registrations. They typically have a limited model range, occupying particular segments of the market, rather than the broad ranges of a volume manufacturer. They do not have the same economic or technical resources available to meet the standards. They will be further penalized by the proposed footprint metric. [OAR-2009-0472-7229.1, p.1]

Niche and small volume manufacturers understand they have to make improvements in their environmental impact, and in many cases they are very efficient in their own particular segments. If they were to be forced out of the US market along with their innovative technologies, this would have little environmental impact and would be to the detriment of market diversity/consumer choice and have a large economic impact: 10,000 US jobs, 80,000 UK jobs and £2bn export value. [OAR-2009-0472-7229.1, p.1]

SMMT is particularly concerned about how niche and small volume manufacturers (SVMs) will be treated within the proposed legislation. Definitions:

-In previous legislation the EPA defines SVMs as those selling less than 15,000 vehicles per annum in the USA (see EPA's '10% related-company aggregation rule' - 40 CFR 86.1838-01). [OAR-2009-0472-7229.1, p.2]

-Niche manufacturers we would define as typically selling less than 100,000 units per year in the US. Such manufacturers do not operate in all segments of the market but primarily specialize in particular types of vehicle. They require special consideration as they can face more stringent targets and have less flexibility to meet them than competitors who happen to operate across all market segments. [OAR-2009-0472-7229.1, p.2]

SMMT is very mindful of the importance of the US market for UK producers and that failure to meet the proposed targets would exclude them from the US market. UK niche and small volume manufacturers employ almost 10,000 people in the USA, through headquarters, dealers and servicing centers. A further 80,000 plus jobs are dependent upon those manufacturers back in the UK. Approximately 25% of what is built by these manufacturers is exported to the USA, with a value of some £2 billion. If these UK manufacturers were to be forced out of the US market this would jeopardize exports to other countries in North and South America that are reliant upon linked export lines. Also, given the importance of US sales volumes, this would put the entire business case for those UK companies at risk. [OAR-2009-0472-7229.1, p.2]

UK niche/SVMs are independent companies, without the significant resources and economies of scale available to the volume manufacturers. They also have a limited model range (in some cases just one model) and predominantly occupy specific market segments, such as sports cars and 4x4s, which tend to be higher CO_2 emitting. [OAR-2009-0472-7229.1, p.3]

These types of products may also be further penalized by the footprint metric. Sports cars tend to be small, with powerful engines, while 4x4s often also have higher CO_2 emissions than standard saloon cars because they need more powerful engines to perform the off road tasks they are legitimately designed for. [OAR-2009-0472-7229.1, p.3]

Having a limited model range creates less ability to spread the impact of the regulation. Given the limited resources low volume manufacturers may tend to also have longer model replacement cycles (needing greater time to recover investment costs), ensuring a more limited ability to develop the vehicles. Furthermore, as low volume manufacturers often buy-in technologies from volume manufacturers there maybe be a time lag on when those technologies are available. [OAR-2009-0472-7229.1, p.3]

Independent SVMs are often competing against brands that are part of larger manufacturer groups, who sell across a wider segment range. Those brands that are part of a wider group will be in a better position to off-set their performance than an independent manufacturer. They would also have the resources available to them of the larger manufacturers, which a niche/SVM would not. [OAR-2009-0472-7229.1, p.3]

Whilst the trading element could provide a possible remedy for meeting the targets, this creates a large element of uncertainty: will allowances be available and at what price? This would be difficult to build into a business plan. These companies want to be able to comply. They do not want to be left with no option but to plan to buy credits from a company that we must not forget is a competitor. SMMT believes it would be better regulation to structure the proposal to enable them to comply and make a direct contribution to its aims. [OAR-2009-0472-7229.1, p.3]

Exclusion from the US market would also lead to job losses in the US, through closure of dealer and servicing centres, as well as distribution and marketing companies. It could also threaten the overall viability of those businesses in total, with the US representing up to 40% of their worldwide sales (average 25%). [OAR-2009-0472-7229.1, p.5]

Lotus Cars Ltd.

Lotus Cars is concerned that the costs generated by EPA and NHTSA for analysis are not applicable to small volume manufacturers. In effect, the engineering effort and development cost to re-engineer a part/system with the goal of increased efficiency will likely remain relatively consistent irrespective of future production volume. However, when that cost is evaluated as a 'cost per vehicle', a small volume manufacturer has far fewer production vehicles over which to spread the cost, hence the cost per vehicle will be dramatically higher. Lotus Cars does not believe that the EPA and NHTSA joint Technical Support Document provides consideration of 'cost per vehicle' technology introduction with regard to small volume manufacturers.

Furthermore, searches of the EPA and NHTSA joint Technical Support Document using terms such as 'small volume', 'SVM', 'niche', etc, yield zero results. This is understandable, as attempting to quantify the predicted cost effects of the proposed legislation for small volume manufacturers would simply demonstrate that a 'one size fits all approach' is not appropriate for these manufacturers. The unique nature of small volume manufacturers necessitates legislation that retains a sufficient degree of flexibility to maximize emissions improvements without regulating such manufacturers out of the market. [OAR-2009-0472-7249, pp.6-7]

TLAAS is effectively a flexible phase-in allowance on route to total compliance with the fleet average greenhouse gas emissions standards. EPA has requested comment from small volume manufacturers, as to whether TLAAS provides sufficient lead-time for achievement of the fleet average greenhouse gas standards. As the proposed legislation is not currently considered appropriate for small volume manufacturers, Lotus Cars asserts that the TLAAS allowance is not conducive to effective greenhouse gas emission reductions from manufacturers within this classification. It is, however, important to note that small volume manufacturers are often reliant on inheriting new technology from large volume manufacturers. Such technology is generally only available for a small volume manufacturer to develop and incorporate into future products once one or more large volume manufacturers has the technology in full production. Therefore, lead-time allowances for small volume manufacturers are an important consideration with all new legislation that is at least partially reliant upon newer technologies. Lotus Cars has previously found EPA's standard procedure for small volume manufacturers to be appropriate, whereby an exclusion from new legislation is permitted during any phase-in period. This is considered reasonable given the limited production volumes, access to new technology, and very limited number of models produced by such manufacturers.

Partial justification for the TLAAS allowance is attributed to the following statement: EPA projects that the environmental impact of the proposed TLAAS program will be very small. If all companies eligible to use the TLAAS use it to the maximum extent allowed, total GHG emissions from the proposal will increase by less than 0.4% over the lifetime of the MY 2012-2016 vehicles. This allows for a number of manufacturers (11 in total, based on 2008MY sales figures) to produce 100,000 vehicles each over a 4 model year period with significantly higher greenhouse gas emissions (total 1.1 million vehicles). A small number of small volume manufacturers each producing less than 15,000 vehicles per annum with fleet average greenhouse gas emissions higher than the standards applicable for large volume manufacturer fleet averages, would clearly have a minute impact on total greenhouse gas emissions in comparison. Such figures could be used to demonstrate that greenhouse gas limiting legislation is not appropriate in any way to small volume manufacturers, and that removing SVM's from all such legislative requirements would have no significant impact on total greenhouse gas emissions. However, Lotus Cars does not believe that this sets an appropriate example, and as such seeks to achieve an appropriate level of legislation that would both encourage and require greenhouse gas emissions reductions, whilst still supporting both new and existing small volume manufacturers. [OAR-2009-0472-7249, pp.7-8]

Lotus recommends revisions to the proposed legislation that would provide similar small volume manufacturer provisions to current CAFE legislation, whereby small volume manufacturers would have the ability to petition EPA/NHTSA with proposed green house gas fleet average

emissions targets. Such petitions should contain evidence as to the relevance of the proposed target (considering the vehicle type(s) in production), together with details of the work a manufacturer is undertaking to reduce greenhouse gas emissions of its vehicles, irrespective of vehicle type(s). In accordance with EPA's standard procedure for new legislation, Lotus Cars recommends that small volume manufacturers are excluded from legislative requirements during the effective phase-in period, to allow sufficient time for product plans to be aligned with legislative requirements. Lotus further recommends that the definition of a small volume manufacturer, for the purposes of this legislation, is in accordance with the current EPA definition. The EPA definition of a small volume manufacturer is one who sells fewer than 15,000 vehicles in all states and territories of the United States within a given model year. Lotus Cars believes that it is correct to define a manufacturer with sales figures below this threshold as a small volume manufacturer, given the different product lines and development procedures employed. Lotus Cars further believes that the application of such a threshold based on vehicle sales within US territories and states represents the best determination for whether to classify a manufacturer for small volume allowances. Manufacturers who sell vehicles in other territories, which may have significantly differing regulatory requirements, are not necessarily better positioned to meet the legislative requirements of EPA and/or NHTSA.

Proposal in summary: 'SVM compliance starts at end of effective phase-in period 'Manufacturer specific GHG emission targets for SVM's' Targets determined through manufacturer proposal, with administrator final decision 'SVM definition as per EPA legislation.

The joint EPA/NHTSA legislative proposal seeks to 'achieve substantial reductions of greenhouse gas (GHG) emissions and improvements in fuel economy from the light-duty vehicle part of the transportation sector'. Due to the particularly low volumes of vehicle involved, Lotus Cars asserts that the above recommended amendments to the proposed regulations will not have any significant impact on the ability of such legislation to achieve these aims within the transportation sectors. Indeed, calculations using worst case emissions and sales figures show that the proposed amendments would affect net greenhouse gas emissions from new vehicles in the light-duty vehicle industry by less than 0.1%. [OAR-2009-0472-7249, p.9]

Lotus also submitted confidential business information regarding their product plans and emissions reduction capabilities.

Koenigsegg Automotive AB

We hereby support the comment filed by Vehicle Services Consulting, Inc. as regards the GHG proposal and small volume manufacturers. [OAR-2009-0472-7194.1, p.1] [See Vehicle Services Consulting, Inc.'s comments in outline section 5.4.2.]

Tunick, Lance

This comment is being filed on behalf of small volume specialty vehicle manufacturers who do not qualify as 'Small Volume Manufacturers' (SVM) under EPA regulations.

EPA Response to Comments

This comment concerns EPA and NHTSA's joint proposal to establish a National Program consisting of new standards for light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. 74 FR 49454, September 28, 2009 . EPA is proposing greenhouse gas emissions standards under the Clean Air Act, and NHTSA is proposing Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act, as amended. These standards would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016, and represent a harmonized and consistent National Program.

We address here the proposed EPA C02 standard from the point of view of a small volume test group (SVTG) of a small volume specialty vehicle manufacturer that: --does NOT qualify as an SVM under EPA regulations (40 CFR 86.1838) only due to the fact that it is part of a larger automobile group and hence lose SVM status under the EPA '10% aggregation rule' that governs how to calculate US sales when considering the 15,000/yr SVM limit, but --operates its own engineering center and production facilities.

In this comment, the above type of manufacturer will be referred to as a 'Operationally Independent Small Volume Manufacturer', 'OI-SMV'.

We fully support a GHG standard that makes OI-SVMs do their fair share and that does not give them a 'free ride'. There is, however, a significant factor that must be considered when deciding what is 'fair share': OI-SVMs that manufacturer high performance specialty vehicles cannot, by virtue of their characteristics, meet the C02 requirements proposed by EPA.

We therefore propose that for a SVTG of an OI-SVM there be a special C02 rule as discussed below. There is already an important EPA precedent for the idea of certain SVTG having a special rule allowing reduced compliance: in 40 CFR 86.1845, the in-use testing requirement, certain very low volume SVTG are exempt from such testing if the annual US sales of the test group are below 5001. We propose a similar C02 rule for SVTG that have fewer than 5001 US sales.

A special SVTG rule as regards C02 could follow one of two possible paths: 1. The first path is the one already taken by the European Union (see Article 11 of Regulation (EC) No 443/2009). The essence of the rule would be that as regards an SVM or an OI-SVM having an SVTG with fewer than 5001 US sales, the SVM or OI-SVM would receive an alternative C02 standard determined on a case-by-case basis based on feasibility. 1 2. The second possible path is to follow the theory behind EPA's entire C02 proposal - to reduce C02 emissions in MY 2016 by 20% as compared to MY 2008. To this end, EPA could calculate the average C02 emissions from MY 2008 SVTGs having fewer than 5001 US sales, and then require for MY 2016 a 20% reduction of the MY 2008 value for all such SVTG.

We further propose that final rule delay the effective date of the EPA C02 standard until MY 2016 for SVTG of OI-SVM that have fewer than 5001 US annual sales in order to allow an orderly compliance transition.

The joint proposal does not adequately address the needs of SVTGs of OI-SVM. To this end, the final rule should delay the effective date of the EPA C02 standard until MY 2016 for certain

SVTG as discussed above and should, as regards model years starting with 2016, adopt one of the SVTG strategies set forth above. [OAR-2009-0472-7208.1, pp.1-2]

[[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, pp. 140-144]]

First, EPA's usual policy is to allow SVMs to defer compliance with a new requirement until the end of phase-in. In my opinion, under the proposed EPA rule, the period 2012 through 2015 is analogous to a phase-in, and, accordingly, EPA should defer SVM compliance until after this period, that is, until 2016. That is what California is doing in its GHG rule.

But, again, EPA failed to include any such deferral. Instead, EPA only proposed a temporary lead-time allowance for manufacturers with vehicle sales below 400,000. This 400,000-unit-per-year proposal, however, is certainly not an SVM proposal.

Once again, we urge that the final rule defer SVM compliance until 2016 as California did in its rule.

And, in fact, EPA has acknowledged the potential need for this deferral. In the preamble, EPA recognized that some manufacturers are niche firms with sales volumes well below 10,000 vehicles per year worldwide. And, in fact, EPA gave the example of Aston Martin.

EPA correctly anticipated that a number of SVMs will face greater challenges in meeting the proposed standards due to their limited product lines and limited with no ability to average.

EPA therefore requested comment on whether the proposed 400,000-unit-per-year program provided sufficient lead time for these SVMs in order for them to incorporate technology needed to comply with the proposed standards.

The California type of section that I am urging would require SVMs to meet, beginning in 2016, the average CO_2 equivalent emissions of all 2012-comparable vehicles produced by the major vehicle manufacturers.

My third point today is that the SVM provision that EPA did include in its proposal concerns certain limited SVM exemptions, but the exemptions are only for SVMs that meet the Small Business Administration criteria contained in 13 CFR.

With this limitation, the proposed exemptions appear to apply only to American companies. This U.S.A-only limitation may very well run afoul of the World Trade Organization requirements.

Fourth, the credit provisions in EPA's proposal do not offer a solution for SVMs during the period 2012 to 2015. It is difficult to understand how credits will be available to SVMs in the short term, that is, during this 2012 to 2015 period.

It is certainly risky at best for an SVM to plan its compliance strategy around the possibility of such credits being available.

My fifth and last point is that the proposed EPA enforcement mechanism would render illegal SVM vehicles that did not comply with the CO_2 standard. This is a very harsh penalty as compared, for example, to the CAFE enforcement program that has monetary fines.

But EPA has explained that the structure of the Clean Air Act mandates the enforcement scheme that EPA has proposed. Assuming this to be the case, the equitable solution is to adopt a reasonable GHG standard for SVMs.

MD McLaren Automotive Ltd.

EPA proposed a temporary lead-time allowance for MY 2009 manufacturers based on vehicle sales below 400,000 vehicles. This 400,000 unit per year proposal is not consistent with an SVM proposal, because EPA defines SVM as a company with fewer than 15,000 USA sales per year. This proposal also states that this allowance is not applicable to new manufacturers introducing products to the market that did not sell vehicles under their nameplate in the US in MY 2009, a criterion that is not relevant to a manufacturer's ability to comply with emissions standards.

The EPA should consider that in the case of McLaren Automotive, we have been designing and producing cars that are homologated and sold in the US market since 2003, including MY 2009. However, since the 716 SLR McLaren cars sold during this time in the US were sold under the Mercedes badge, we would not be eligible for any type of TLAAS. Additionally, we have been developing the MP4-12C model since well prior to this proposed rulemaking, investing capital with the anticipation of distributing, selling and servicing our cars through a U.S. distribution network that will employ over 200 people.

The TLAAS provision does not provide McLaren Automotive, as an SVM, with an achievable GHG limit: McLaren Automotive has a limited product line focused on the sports car segment and cannot therefore average. Large volume manufacturers are able to offset emissions from higher emission vehicle types, with lower emissions from lower performance vehicle types. In this way, several large manufacturers will be allowed to sell cars in the marketplace that compete directly against our MP4-12C, but have much higher C02 emissions, while we would be excluded from the market. McLaren Automotive's new models are class-leading and introduce new technologies into the auto industry, but no technologies exist, or will exist in the near future, that will permit the cars we produce to meet the current required fleet average. Any allowances or deferrals are currently not applicable to McLaren Automotive as we technically did not sell a car in the US in MY 2009 under our own nameplate.

As such, the proposed TLASS provision is inappropriate for both McLaren Automotive and other small volume manufacturers.

McLaren Automotive would like to propose that under the TLAAS rule, the period 2012-2016 is analogous to a phase-in of the new GHG requirements, and accordingly. EPA should defer SVM compliance until after this period (i.e. until 2017 and later)B. This would align with EPA's usual

policy to allow SVM's to defer compliance with a new requirement until the end of a phase-in. (See e.g. 40 CFR 1811-04).

The proposed provision allowing an SVM exemption for the period 2012-2016 is only for certain small businesses; those that meet the Small Business Administration criteria contained in 13 CFR 121.201.10. With this limitation, however, the proposed exemption appears to apply only to US companies, which would exclude the vast majority of SVM's. McLaren Automotive would like the rulemaking to clarify that this deferment applies to non-US companies or adopt an additional standard for a deferment that does apply to SVM companies such as McLaren Automotive that plan to distribute, sell and service their vehicles in the US.

In addition, the SBA provision is limited to auto manufacturers with fewer than 1000 employees. McLaren Automotive believes that this criterion is not relevant to a manufacturer's ability to comply with emissions standards (as significant portions of work could be outsourced to give an appearance of fewer than 1000 employees) and would propose that if EPA leaves in place the employee standard that it also incorporate an alternative standard that relates to vehicle sales. One such approach would be for EPA to consider the historically determining EPA SVM status of 15,000 vehicle sales as the standard.

Under the Small Entity Deferment, EPA embraced both the idea of omitting certain small entities from the final rule, as well as the idea that SVM's, such as McLaren Automotive, need a specially structured program. Since the total SVM GHG effect on the environment is minimal, it would be logical to follow this approach. McLaren Automotive proposes that the same statutory authority permitting the small entity exemption applies to SVM's and requests that EPA extends the idea to all SVM's, rather than only some. [NHTSA-2009-0059-0078, pp.6-7]

McLaren Automotive achieved class leading CO_2 and safety results without any assistance from large OEM's. We expect the 12C to sell between 250-350 cars annually into the US market. Moving forward, McLaren Automotive has planned a range of other models which will not only significantly reduce the price point of models available with these technologies, but will also introduce (over the next 3-5 years) new, innovative technologies designed to improve efficiency even further. Over this time period, we hope to grow US sales annually through a US distribution system that will employ over 200 people. Thus, we are clearly in a class of small manufacturers that would be eliminated from the U.S. marketplace under the proposed rule.

The best approach to this issue is that taken by the State of California staff report supporting the California GHG rule: 'low volume manufacturer offerings need to be preserved In the marketplace to ensure continued consumer choice of specialty vehicles. Given their more limited resources to make major revisions to their powertrains, it was also important to provide such manufacturers with greater lead-time to make improvements to their products. In addition, staff needed to consider that major volume manufacturers could produce specialty offerings in direct competition with these smaller manufacturer offerings, but offset their potentially poorer GHG emission performance by making other easier to control cars in their fleet incrementally cleaner The California SVM provisions provided an exemption from the phases in period and proposed a methodology for an alternative SVM standard. [NHTSA-2009-0059-0078, p.5]

EPA Response to Comments

EPA suggests that 'for a few very small volume manufacturers, EPA projects that manufacturers will likely comply using a combination of credits and technology.'

The proposal's credit provisions do not help SVM's during the period 2012-2016. Large manufacturers may themselves need to balance the credits between their own fleets and there is no requirement for large manufacturers to sell credits, nor is there an agreed price or proposal of how the credits will be available for purchase during this period. A large manufacturer that also produces sports cars that compete directly against McLaren Automotive would certainly prefer to exclude a competitor from the market rather than sell it credits at a fair price so that it could compete.

As such, the market for credits is unpredictable and there is no guarantee that credits will be available to an SVM during the period 2012-2016. [NHTSA-2009-0059-0078, p.7]

[The following is from NHTSA-2009-0059-0078, p.8]

McLaren Automotive proposes that EPA include the definition of an SVM within the new proposal. The EPA definition of a small volume manufacturer is one who sells fewer than 15,000 vehicles in all states and territories of the United States within a given model year. EPA should then defer the GHG standards for SVM's to at least 2017 Model Year, considering the methods below:

1. Under the proposed TLAAS rule, the period 2012-2016 is analogous to a phase-in of the new GHG requirements, and accordingly, EPA should defer SVM compliance until after this period, (i.e. until 2017 and later). This would align with EPA's usual policy to allow SVM's to defer compliance with a new requirement until the end of a phase-in.

2. Include the SVM definition in the conditional exemption from greenhouse gas emissions standards permitting the small entity exemption to all SVM's.

3. Deferrals included in the proposal should not be limited to sales in any previous Model Year, but should be made available to all new entrants to encourage the introduction of new innovations.

4. EPA could then consider appropriate GHG standards for SVM's as part of a future regulatory action.

5. EPA should apply the historic definition of an SVM.

Note that during this period, McLaren Automotive, and other SVM's, would still be required to meet all NHTSA CAFE and CARB regulations.

In addition, McLaren Automotive proposes that the GHG standards should follow a similar process to the current NHTSA CAFE legislation. The SVM should have the ability to petition EPA with a proposed GHG fleet average target based on the model mix. This will ensure that a vehicle from a SVM has a comparable GHG target when assessed against a comparable vehicle

from a large manufacturer. The petitions should contain evidence as to the relevance of the proposed target together with details of the work a manufacturer is undertaking to reduce greenhouse gas emissions of its vehicles, irrespective of vehicle type.

A second approach to handling the post 2016 Model Year period for SVM's would be to adopt an SVM 'California Compliance Option' which would allow SVM's to comply with the SVM provisions in the California GHG standard as a means of achieving federal compliance. California, under CAA waivers, has routinely established SVM standards that differ from California standards for large volume manufacturers.

There is clear EPA precedent for a California Compliance Option approach such as the OBD requirements set forth in 40 CFR 1806-05. Under that section, compliance with California OBD regulation satisfies EPA requirements. The EPA has already considered the question of whether a 'California Compliance Option' is permissible under the CAA, and has, without hesitation, concluded that it is. The same rationale should apply here.

McLaren also submitted confidential business information regarding their product plans and emissions reduction capabilities.

Morgan Motor Company Ltd.

Morgan Motor Company Ltd files these comments as regards EPA and NHTSA's joint proposal to establish a National Program consisting of new standards for light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. 74 FR 49454, September 28, 2009.

We hereby support the comment filed by Vehicle Services Consulting, Inc. as regards the GHG proposal and small volume manufacturers.

Spyker Cars

We hereby support the comment filed by Vehicle Services Consulting, Inc. as regards the GHG proposal and small volume manufacturers. [See Vehicle Services Consulting, Inc.'s comments in outline section 5.4.2.]

KTM-Sportsmotoercycle AG

We hereby support the comment filed by Vehicle Services Consulting, Inc. as regards the GHG proposal and small volume manufacturers. [See Vehicle Services Consulting, Inc.'s comments in outline section 5.4.2.]

The temporary lead-time alternative allowance standard is more applicable to firms significantly larger than us, and that the proposed footprint metric will further penalize our particular type of product. [OAR-2009-0472-7183, p.1]

We would like better provision for small volume manufacturers to be developed, as established in the European Union's new car CO_2 regulation, so we can contribute to reducing CO_2

emissions but in a manner that adequately reflects our economic and market potential and that also ensure diversity within the market place can continue. [OAR-2009-0472-7183, p.1]

There are several ways forward that we would support, such as developing specific emissions target reductions for small volume manufacturers as in the EU new car CO_2 regulation makes provision for. [OAR-2009-0472-7183, p.1]

KTM is developing a number of initiatives to reduce our CO_2 and other GHG emissions. However, we are a very low volume producer, with limited economic and technical resources, especially when compared with a volume manufacturer. [OAR-2009-0472-7183, p.1]

European Small Volume Car Manufacturers' Alliance (ESCA)

ESCA members represent less than 0.5% of US registrations. They typically have a limited model range, occupying particular segments of the market, rather than the broad ranges of a large volume manufacturer. They do not have the same economic or technical resources available to meet the standards. They will be further penalized by the proposed footprint metric. Exclusion from the US market would lead to job losses in the US, through closure of dealer and servicing centers, as well as distribution and marketing companies. It could also threaten the overall viability of those businesses in total, with the US representing up to 40% of worldwide sales (average 25%). [OAR-2009-0472-7287.1, p.1]

ESCA member companies welcome challenging but achievable emissions reduction targets. European based manufacturers have invested significant sums of money in developing lower emitting vehicles and low volume manufacturers in particular have been innovative, particularly in terms of light-weighting products, such as use of aluminum chassis, carbon fiber and bonded rather than welded structures. [OAR-2009-0472-7287.1, p.1]

Access to the US market is critical for European SVMs. Failure to meet the proposed targets would exclude ESCA member companies entirely from selling automobiles in the US. Small volume manufacturers understand the need for improvements in their environmental impact and in many cases they are very efficient in their own particular segments. If they were to be forced out of the US market along with their innovative technologies, this would have little environmental impact and would be to the detriment of market diversity/consumer choice and have a large economic impact namely, up to 10,000 US jobs, 100,000 EU jobs and up to € 2½ billion export value. [OAR-2009-0472-7287.1, p.2]

ESCA is particularly concerned about how SVMs will be treated within the proposed legislation. In previous legislation the EPA defines SVMs as those selling less than 15,000 vehicles per annum in the USA (see EPA's '10% related-company aggregation rule' - 40 CFR 86.1838-01). The proposed temporary lead-time alternative allowance standard and small entity conditional exemption will not, in their proposed format, offer a suitable solution for European small volume manufacturers. ESCA hopes that solutions can be developed to ensure challenging yet achievable long term targets for manufacturers. Our evaluation of the EPA/NHTSA proposal is attached as an annex. [OAR-2009-0472-7287.1, p.2]

ESCA companies are also now looking forward to complying with the requirements of the pan-European new car CO_2 regulation, which begins in 2012. Article 11 of this regulation makes a provision for SVMs to agree targets more appropriate to their economic and technological potential (see Regulation 443/2009, Art. 11). ESCA is particularly concerned that in the current US proposal for lower volume manufacturers, the temporary lead time allowance alternative standards and the small entity conditional exemption, do not offer a suitable provision for European SVMs. [OAR-2009-0472-7287.1, p.2]

ESCA member companies have limited ability to spread the impact of the proposed US regulation. Given limited resources low volume manufacturers may tend to also have longer model replacement cycles (needing greater time to recover investment costs), ensuring a more limited ability to develop vehicles. Furthermore, as low volume manufacturers often buy-in technologies from volume manufacturers there may be a time lag for when those technologies are available. Also, we compete against brands that are part of larger manufacturer groups, who sell across a wider segment range. Large manufacturers have resources available to them which SVMs do not. [OAR-2009-0472-7287.1, p.2]

Whilst the trading element could provide a possible remedy for meeting the targets, this creates a large element of uncertainty: will allowances be available and at what price? This would be difficult to build into a business plan. These companies want to be able to comply. They do not want to be left with no option but to plan to buy credits from a company that we must not forget is a competitor. ESCA believes it would be better regulation to structure the proposal to enable them to comply and make a direct contribution to its aims. [OAR-2009-0472-7287.1, p.2]

Europe's SVMs remain committed to lowering CO_2 emissions, improving fuel economy and providing consumers with choice and diversity. European SVMs represent less than 0.5% of US sales, but are keen to participate. However, the limitations of their financial resources and ability to develop or access technology need to be taken into account. [OAR-2009-0472-7287.1, p.3]

Within the EPA/NHTSA proposal the 'Temporary Lead-time Alternative Allowance Standard' (TLAAS) to 2016 is welcome. This allows manufacturers selling less than 400,000 cars to apply for a target of 125% of proposed industry-wide footprint target level. However, due to the high initial target faced by European SVMs this flexibility is insufficient to enable them to comply with the standard. [OAR-2009-0472-7287.1, p.4]

The proposed TLAAS allowance is also only available to vehicle manufacturers with vehicles for sale in MY 2009. Some SVMs are not currently selling into the US market, in part due to the current economic climate. They would therefore be excluded from being able to use the TLAAS in future. [OAR-2009-0472-7287.1, p.4]

Artega Automobil GmbH & Co. KG

As an EU based small volume manufacturer we believe the proposed standards will be impossible to meet. We would like better provision for small volume manufacturers to be developed, as established in the European Union's new car CO_2 regulation, so we can contribute to reducing CO_2 emissions but in a manner that adequately reflects our economic and market

potential and that also ensure diversity within the market place can continue. [OAR-2009-0472-7481.1, p.1]

The temporary lead-time alternative allowance standard is more applicable to firms significantly larger than us, and that the proposed footprint metric will further penalize our particular type of product. [OAR-2009-0472-7481.1, p.1]

There are several ways forward that we would support. such as extending the small entity conditional exemption to all small volume manufacturers, or developing specific emissions target reductions for small volume manufacturers as in the EU new car CO_2 regulation makes provision for. [OAR-2009-0472-7481.1, p.2]

Artega Automobil GmbH & Co. KG is developing a number of initiatives to reduce our CO_2 and other GHG emissions. However, we are a very low volume producer with limited economic and technical resources, especially when compared with a volume manufacturer. [OAR-2009-0472-7481.1, p.2]

Wiesmann GmbH

As an EU based small volume manufacturer we believe the proposed standards will be impossible to meet. We would like better provision for small volume manufacturers to be developed, as established in the European Union's new car CO_2 regulation, so we can contribute to reducing CO_2 emissions but in a manner that adequately reflects our economic and market potential and that also ensure diversity within the market place can continue. [OAR-2009-0472-7198, p.1]

The temporary lead-time alternative allowance standard is more applicable to firms significantly larger than us, and that the proposed footprint metric will further penalize our particular type of product. [OAR-2009-0472-7198, p.1]

There are several ways forward that we would support, such as developing specific emissions target reductions for small volume manufacturers as in the EU new car CO_2 regulation makes provision for. [OAR-2009-0472-7198, p.1]

Wiesmann is developing a number of initiatives to reduce our CO_2 and other GHG emissions. However, we are a very low volume producer, with limited economic and technical resources, especially when compared with a volume manufacturer. [OAR-2009-0472-7198, p.1]

IMPCO Technologies, Inc.

EPA is proposing to defer setting greenhouse gas emissions standards for entities meeting the Small Business Administration criteria of a Small Business.

IMPCO falls under the definition of a "Small Entity", however, because IMPCO is part of a larger holding company, the overall organization does not qualify as a Small Entity. Therefore, IMPCO would be subject to the same CH_4, and N_2O emissions standards as those for automotive

manufacturers. Given the relative size of IMPCO's U.S. operations and volume of fuel systems to be sold, this directly puts IMPCO at a tremendous disadvantage. [OAR-2009-0472-7282.1 p.3]

EPA Response:

EPA agrees with comments that the standards would be extremely challenging and potentially infeasible for very small volume manufacturers, absent credits purchased from other manufacturers, and that such credit availability at this point is highly uncertain. Although these companies are planning to introduce significant GHG-reducing technologies to their product lines, they are still highly unlikely to meet the standards by MY2016. Because the products produced by these manufacturers are essentially unique, these manufacturers were not included in EPA's OMEGA modeling assessment of the technology feasibility and costs to meet the proposed standards. These manufacturers have only a few models and have very high baseline emissions. TLAAS manufacturers are projected to be required to reduce emissions by up to 39%, whereas SVMs in many cases would need to cut their emissions by more than half to comply with MY2016 standards (e.g., Based on MY2009 CAFE levels, one of these manufacturers has baseline emissions of 468 g/mile).

Given the unique feasibility and related lead time issues raised for these manufacturers, EPA is deferring establishing CO_2 standards for manufacturers with MY2008 or MY2009 sales of less than 5,000 vehicles. This will provide EPA more time to consider the unique challenges faced by these manufacturers. The deferment only applies to CO_2 standards; SVMs must meet N_2O and CH_4 standards. EPA plans to set standards for these manufacturers as part of a future rulemaking in the next 18 months. This future rulemaking will allow EPA to fully examine the technologies and emissions levels of vehicles offered by small manufacturers and to determine the potential emissions control capabilities, costs, and necessary lead time. This timing may also allow a credits market to develop, so that EPA may consider the availability of credits during the rulemaking process. See State of Mass. v. EPA, 549 U.S. at 533 (EPA retains discretion as to timing of any regulations addressing vehicular GHG emissions under section 202 (a)(1)). We expect that standards would begin to be implemented in the MY2016 time frame. Several commenters supported the approach of deferring standards to a future rulemaking. This approach is also consistent with that envisioned by California for these manufacturers, as noted by several commenters. EPA estimates that eligible small volume manufacturers currently comprise less than 0.1 percent of the total light-duty vehicle sales in the U.S., and therefore the deferment will have a very small impact on the GHG emissions reductions from the standards.

In addition to the 5,000 vehicle per year cut point, to be eligible for deferment each year, manufacturers must also demonstrate due diligence in attempting to secure credits from other manufacturers. Manufacturers must secure credits to the extent they are available at a reasonable price from other manufacturers to offset the difference between their baseline emissions and what their obligations would be under the TLAAS program starting in MY2012. Several small volume manufacturers commented that they would be willing to purchase credits from other manufacturers as a way to comply with standards, assuming that the credits are available at a reasonable cost.

EPA Response to Comments

Several commenters noted in their recommendations that EPA has historically used an annual sales cut point of 15,000 vehicles in defining small volume manufacturers in the past for Tier 2 and other rules. EPA, however, believes 5,000 vehicles is sufficient to address small volume manufacturers and that using 15,000 vehicles would not result in covering additional manufacturers. Small volume manufacturers, including many of those that commented in support of additional leadtime, typically sell 1,000-2,000 vehicles per year and therefore the 5,000 vehicle cut point provides a reasonable margin for sales growth. In the interest of establishing the small volume manufacturer provisions as narrowly as possible while still accomplishing the purpose of the provisions, EPA has decided to use a cut-point of 5,000 vehicles.

EPA received comment from Ferrari that EPA should allow a manufacturer to apply to EPA to establish small volume manufacturer status based on the independence of its research, development, testing, design, and manufacturing from another firm that may have an ownership interest in that manufacturer. EPA has reviewed these comments, but is not finalizing such a provision at this time. EPA believes that this issue likely presents some competitive issues, which we would like to be fully considered through the public comment process. Therefore, EPA plans to consider this issue and seek public comments in our proposal for small volume manufacturer CO_2 standards, which we expect to complete within 18 months. In determining eligibility for SVM deferment, manufacturers must be aggregated according to the provisions of 40 CFR 86.1838-01(b)(3), which requires the sales of different firms to be aggregated in various situations, including where one firm has a 10% or more equity ownership of another firm, or where a third party has a 10% or more equity ownership of two or more firms.

Small Volume Test Groups

EPA received comments that EPA should consider exempting small volume test groups from the fleet average approach and allow them to comply with a fixed value. This concept is similar to establishing separate standards for small volume manufacturers, but would allow all manufacturers to use the separate standards for a subset of their fleet. EPA did not propose this concept and is not including such a provision in the final rule. Instead, EPA has included a wide range of flexibilities available to manufacturers it believes will be sufficient to address issues with low volume test groups. These flexibilities include averaging, TLAAS, and credits programs.

Comments Concerning Natural Gas Vehicles

Organization: NGVAmerica
Clean Energy Fuels

Comment:

NGV America

EPA's notice exempts small volume manufacturers and aftermarket conversion manufacturers who are small businesses from having to meet the new greenhouse gas emission regulations. See

EPA NPRM, p. 49629. The proposed rule also includes a phase-in period for small volume manufacturers. Aftermarket conversion manufacturers who satisfy the small volume manufacturer requirements potentially would qualify for the phase-in. There would be no exemption for aftermarket conversion manufacturers who are not small businesses, however. See EPA NPRM, p. 49575. We agree with EPA's assessment that exempting small businesses from the proposed regulation will have a negligible impact on greenhouse gas emissions. [OAR-2009-0472-7236.1, p.11]

EPA should also exempt aftermarket conversion manufacturers of alternative fuel systems who are not small businesses from having to comply with the greenhouse gas regulations. These manufactures currently provide a valuable service by offering systems that enable vehicles to operate on alternative fuels. In the light duty vehicle market, there are few original equipment manufacturer (OEM) options for consumers interested in acquiring natural gas fueled vehicles. The alternative fuels industry benefits from having large businesses manufacture, certify and sell aftermarket conversion systems. Subjecting the larger businesses to requirements that are different from their smaller competitors could discourage such businesses from providing aftermarket alternative fuel systems. In addition, the new requirements will be equally difficult for both large and small aftermarket manufacturers since both rely on the catalysts used by the original equipment manufacturer. EPA should exempt large businesses that provide aftermarket conversion systems for alternative fuel vehicles. [OAR-2009-0472-7236.1, p.11]

Clean Energy Fuels

EPA's notice exempts small volume manufacturers and aftermarket conversion manufacturers who are small businesses from having to meet the new GHG emission regulations. See EPA NPRM, p. 49629. The proposed rule also includes a phase-in period for small volume manufacturers. Aftermarket conversion manufacturers who are not small businesses, however, are expected to comply with the new GHG emission requirements. See EPA NPRM, p. 49575. We agree with EPA's assessment that exempting small businesses from the proposed regulation will have a negligible impact on GHG emissions. [OAR-2009-0472-7220.1, p.9]

EPA and NHTSA should also exempt aftermarket conversion manufacturers of alternative fuel systems who are not small businesses from having to comply with the GHG regulations. These manufactures currently provide a valuable service in providing alternative fuel systems, which for the most part are not available from original equipment manufacturers. We think the alternative fuels industry benefits from having large businesses manufacture, certify and sell aftermarket conversion systems. Subjecting the larger businesses to requirements that are different from their smaller competitors could discourage such businesses from providing aftermarket alternative fuel systems. Thus, EPA should exempt large businesses that provide aftermarket conversion systems for alternative fuel vehicles. [OAR-2009-0472-7220.1, p.9]

EPA Response:

EPA is deferring standards for small volume manufacturers with sales of less than 5,000 vehicles regardless of the size of the company, as discussed above. EPA believes that it is appropriate for large companies producing more that 5,000 vehicles to be covered by the program. Allowing

natural gas vehicle manufacturers regardless of the size of the business or the number of vehicles produced to be exempt from the standards is not warranted. Natural gas vehicle manufacturers raised concerns about meeting the proposed CH_4 standards, and while EPA believes the CH_4 standards are feasible, EPA nevertheless is allowing vehicles to comply with the standards on a CO_2 equivalent basis to address these concerns. (See Section 5.5). Therefore, EPA does not anticipate that natural gas vehicles will have difficulty meeting the standards.

Comments Concerning Manufacturers in Developing Countries

Organization: People's Republic of China

Comment:

It provides for the "Special and Differential Treatment of Developing Country Members" in Article 12 of the WTO/TBT Agreement, which stipulates the obligation of developed Members in this respect. For manufacturers of developing countries, there is still a long way to go to meet the requirement of the notified regulation, requiring long-term and huge input in technical R&D and product test, etc. We suggest the United States considering providing developing countries with longer transition period and preparatory period, and offering technical assistance to developing countries, such as offering testing technology and testing equipment, etc. [OAR-2009-0472-11269, p.3]

We note that, vehicles of the small entity are not subject to the restriction of the notified regulation, and are deferred implementing GHG emissions reduction standards. We believe, small volume of import vehicles will have a negligible impact on the GHG emissions reductions, in order to reflect the sufficient competition of the market, and according to the National Treatment principle of WTO, small volume of import vehicles should be treated according to relevant regulations for vehicles of small entity. It is suggested that small volume is defined as the annual import volume in a single model year is not greater than 0.01% of American annual total sales volume. [OAR-2009-0472-11269, p.3]

EPA Response:

Developing country members' automobile manufacturers, as well as U.S. manufacturers that meet the small entity business size criteria are eligible for the small entity exemption. EPA is also deferring standards for small volume manufacturers with U.S sales of less 5,000 vehicles in MY2008 or MY2009, as discussed above. EPA does not believe it is appropriate to extend the SVM deferment to larger companies selling more than 5,000 vehicles or those not already established in the U.S. market. This would open up the deferment to an unknown universe of potential eligible manufacturers, with the potential for gaming. In addition, the TLAAS flexibilities would also apply to eligible developing country manufacturers. Lastly, the primary purpose of this program is to protect public health and welfare. We do not believe it is therefore appropriate or necessary to provide any additional flexibilities beyond the ones included in the final program, similar to how we have treated this issue under previously adopted mobile source programs.

5.5. N2O and CH4 standards

Organization: Alliance of Automobile Manufacturers (Alliance)
Association of International Automobile Manufacturers (AIAM)
Yuli Chew, Private Citizen
Center for Biological Diversity
Chrysler Group LLC (Chrysler)
Clean Energy Fuels
Cummins Inc
Environmental Defense Fund
Ferrari S.p.a
Ford Motor Company
Georgia Department of Natural Resources
Honda Motor Company
IMPCO Technologies, Inc
Manufacturers of Emission Controls Association (MECA)
Mercedes-Benz (Daimler AG)
Mississippi Department of Environmental Quality
Mitsubishi Motors R & D of America (MRDA)
National Association of Clean Air Agencies (NACAA)
Natural Resources Defense Council
Northeast States for Coordinated Air Use Management (NESCAUM)
New York University School of Law, Institute for Policy Integrity (IPI)
NGV America
State of New Jersey
Toyota Motor North America
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
Volkswagen Group of America (Volkswagen)
Volvo Car Corporation

Comment:

Alliance of Automobile Manufacturers (Alliance)

• EPA would not be saddled with establishing and maintaining "backstop" standards for CH4 and N2O that may or may not be applicable to all fuels and/or vehicle technologies. [OAR-2009-0472-6952.1, p.44]

• Since EPA has already proposed an assigned DF for CO2, all other DF issues would be eliminated. [OAR-2009-0472-6952.1, p.44]

EPA should establish that the CH4+N2O factor be set equal to 1.9 gm/mile, which is the same as the factor that is allowed for California Air Resources Board CO2-equivalent calculations. If, in the future, EPA should determine that CH4 or N2O are becoming larger contributors to the CO2-equivalent value, they could simply increase the CH4+N2O factor to account for the change.

This proposal would achieve the GHG reductions as the EPA proposal, but in a much more simplified and cost-effective fashion. [OAR-2009-0472-6952.1, p.44]

• N2O Is not currently measured in a high-production certification-quality volume. To do so will require major test facility upgrades which will take several years to complete because of the technical challenges that have not yet been resolved with regard to the measurement of N2O. There is insufficient lead time to accomplish these tasks in time for MY 2013 implementation.

• The proposed "backstop" standard is too stringent and may preclude the introduction of some alternative technology vehicles.

• The proposal to have N2O be a useful life standard will require manufacturers to establish deterioration factors (DFs), and this will require manufacturers to rerun all forms of durability and data vehicle testing for MY 2013. [OAR-2009-0472-6952.1, p. 43]

• Manufacturers would not be required to upgrade all test facilities to measure N2O, thereby making the rule more cost-effective. [OAR-2009-0472-6952.1, p.44]

N2O Measurement Devices and Interference Verification for N2O Analyzers (Proposed regulations in 40 C.F.R. 86.167-12 and 86.168-12)

The proposed regulations contain multiple references to 40 C.F.R. Part 1065 (1065.145, 1065.205, 1065.275, 1065.307, 1065.342, 1065.750). These sections in turn reference other Part 1065 sections which affect other test site hardware, software, calculations and procedures. One example of this can be found in 40 C.F.R. 86.167-12(a) which states:

General component requirements. We recommend that you use an analyzer that meets the specifications in Table 1 of 40 C.F.R. 1065.205. Note that your system must meet the linearity verification in 40 C.F.R. 1065.307. [OAR-2009-0472-6952.1, p.44]

The linearity verification in 40 C.F.R. 1065.307 requires non-N2O chassis dynamometer gas analyzers to meet the heavy duty engine dynamometer Part 1065 requirements. In addition, other chassis dynamometer systems will have to comply with Part 1065, including exhaust gas dilution systems (CFV's) and their related pressures, temperatures, and batch sampler flow rates; gas dividers, PM balance; barometer; exhaust back pressure; and stand-alone test cell pressures and temperatures. This reference may also bring in new requirements relating to the chassis dynamometer torque, speed and total work (even though these are listed for an engine dynamometer). [OAR-2009-0472-6952.1, pp.44-45]

Recommendation:

Making generic references to the heavy duty Part 1065 procedures quickly affects most of today's light-duty test cell systems, could affect stringency, and is contrary to Part 86, Part 600 and California ARB regulations. The Alliance therefore recommends these 1065 references be deleted and replaced with specific language compatible with Parts 86, 600 and California ARB

regulations. In support of this approach recognize the small N2O contribution to GHG emissions as follows. [OAR-2009-0472-6952.1, p.45]

While CO2 represents 95% of transportation GHG emissions (per GWP), EPA acknowledges that N2O only accounts for 1.6% of these transportation GHG emissions. Other studies also support this low number for N2O emissions. A 1999 study by Ford Motor Company (Environ. Sci. Technol., 1999, 33, 4134-4139) estimated that between 1-3% of the transportation greenhouse gases was attributable to N2O. In addition, a review of over 200 representative tests conducted by vehicle manufacturers on gasoline and E85 (shown in the summary chart below) shows that N2O emissions from cars and trucks are negligible in comparison to CO2. [OAR-2009-0472-6952.1, pp.45-46]

The Alliance acknowledges that more data is needed concerning N2O contribution and supports EPA's efforts to expand the current N2O knowledge base for inventory purposes. However, EPA's proposed approach for generating the desired N2O information during the emissions certification and fuel economy testing processes would entail time and expense that is disproportionate to the overall GHG contribution of N2O emissions. Instead, the Alliance urges EPA to enter into a joint test program with industry as a cost-effective means to learn more about N2O emissions. The results of this test program could then be used to determine whether separate measurement of N2O emissions is warranted. [OAR-2009-0472-6952.1, pp.46-47]

Absent any new data from a joint test program, EPA is urged to consider allowing the use of a default value for N2O (0.006 grams per mile) in lieu of measuring N2O in the exhaust. This factor is identical to that allowed for use by ARB and can be further refined through future studies. [OAR-2009-0472-6952.1, p.47]

As for the proposed N2O measurement and reporting provisions, there is a high level of concern about incorporating the engine dynamometer test procedures specified in 40 C.F.R. §1065 into the chassis dynamometer test procedures for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. 40 C.F.R. §1065 is a complete rewrite of many engine dynamometer test procedures such as heavy-duty on and off road engines, locomotive, marine, small spark ignition, etc. Many of these procedures, specifications, hardware requirements and equations are not compatible with current light-duty test sites and, in some cases, contradict current light- and medium-duty regulations. More specifically:

• Adopting 40 C.F.R. §1065 equipment requirements into the chassis-certified regulations could impact the stringency of current standards for the light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles that certify to current regulations with existing test facilities, equipment, procedures and diagnostics.

• The requirements of 40 C.F.R. §1065, will conflict with the requirements of 40 C.F.R. §86 and §600 for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. Specifically, the standard setting sections, 40 C.F.R. §86 Subparts A & S and 40 C.F.R. §600, require the use of the test procedures set forth in 40 C.F.R. §86 Subparts B & C for certification. In addition, the requirements of 40 C.F.R. §1065, will conflict with the state of California

regulations (and the regulations of other states "Cal LEV" states), because the California regulations base their test procedures on those in 40 C.F.R. §86 and §6005.

• 40 C.F.R. §1065 provisions will require significant hardware, software, license and acquisition, and procedural and diagnostic modifications to existing chassis dynamometer test facilities. These changes will be expensive depending upon the number of test cells at each manufacturer and it will not be possible for manufacturers to modify today's robust chassis dynamometer certification test sites by MY 2013 (certification testing done in CY2012).

• N2O emissions measurement requires a new N2O calibration gas to be NIST (National Institute of Standards and Technology) traceable, typically within ±1.0% of the NIST accepted value. To our knowledge, there are no such standards available "off the shelf" from vendors or NIST. NIST has in the past analyzed special batches of N2O gas for industry, but these were one-off custom bottles. [OAR-2009-0472-6952.1, p.47]

For the above reasons, the Alliance recommends that all 40 C.F.R. §1065 requirements be deleted from all chassis dynamometer certification testing of light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. We recommend retaining the existing Parts 86 and 600 requirements with modifications to include N2O instrument specific test procedures in the appropriate sections of 40 C.F.R. §86 Subpart B. These modifications could be similar to the analyzer specific procedures being proposed for 40 C.F.R. §1065 minus any criteria that are contrary to current Parts 40 C.F.R. §86 and §600. [OAR-2009-0472-6952.1, p.48]

By doing this, EPA would bring executable measurement certainty for the OEMs trying to meet the GHG requirements and will provide compatibility with the existing light-duty, Part 86 compliant test equipment, software and procedures. In addition, deleting the Part 1065 references provides OEMs with firm guidance as to what the requirements are for long term facility planning purposes, and removes the uncertainty with the evolving nature of the HD Part 1065 procedures. [OAR-2009-0472-6952.1, p.48]

In the event that EPA decides to pursue actual N2O measurement and reporting, as proposed, EPA should provide sufficient lead-time (at least until MY 2013) to implement such a program. EPA should also limit the certification test modes for N2O emissions measurement (e.g., FTP mode on emission data vehicle only) to minimize manufacturers' burden. [OAR-2009-0472-6952.1, p.48]

Note that the N2O measurement issues could also be avoided if EPA accepts the previously stated recommendation to eliminate the N2O emission standard. [OAR-2009-0472-6952.1, p.48]

Association of International Automobile Manufacturers (AIAM)

EPA proposes capping emission rates for nitrous oxide and methane at current emissions levels. As EPA notes, even after adjusting for the higher global warming potential of these substances, they collectively account for less than 1 percent of light vehicle greenhouse gas emissions. See 74 FR 49507. EPA initially projects no economic impact resulting from these caps (see 74 FR 49511); however, the Agency later notes that this is not the case. Measuring and reporting these

emissions will involve additional costs for manufacturers, particularly in the case of nitrous oxide. Additional test equipment will be needed to measure nitrous oxide emissions, with resulting facility costs for manufacturers. Id., at 49525. Our members report that the currently available commercial laboratory test equipment for nitrous oxide measurement is not capable of accurately and repeatably measuring the very low levels of nitrous oxide emissions, i.e., 0.001 g/mile level, in vehicle exhaust, thus potentially increasing overall test burden due to voided tests as well as normal testing. [OAR-2009-0472-7123.1, p.5]

In addition, the nitrous oxide standard proposed by EPA is a vehicle-specific standard, not a fleet average standard as is provided for carbon dioxide, potentially creating an additional burden on manufacturers to assure consistent compliance across all vehicle models. EPA notes that nitrous oxide emissions vary with different types of catalyst designs, so it would be necessary for manufacturers to assure that each catalyst design in their fleet of vehicles would not increase emissions of that substance. Since current emission control technologies for NOx emissions also tend to control N2O, there is no current basis for concluding that overall N2O emissions could increase in the future. [OAR-2009-0472-7123.1, p.5]

AIAM concludes that a methane cap is unnecessary. The only potential scenario for an increase in vehicle methane emissions cited by EPA is a substantial increase in the production of CNG vehicles. Id. at 49525. EPA notes that current emission controls tend to achieve reductions in methane as well, so there is no basis for anticipating that methane emissions would generally increase. EPA subsequently states that recent CNG vehicles meeting Tier 2 standards have had methane levels consistent with conventional vehicles. See Id at 49526. [OAR-2009-0472-7123.1, p.5]

Available data and information provide no basis for anticipating that either nitrous oxide or methane emissions will increase in the future, and current Tier 2 (and potentially future standards as well) would tend to reduce emissions of these substances. Additional testing and administrative burdens would be required to comply with the proposed caps, and new test equipment would be needed to measure nitrous oxide emissions. For these reasons, we urge EPA to adopt a default CO2 equivalent emission value for these substances for the 2012-2016 model years, similar to the approach that CARB took. Testing and reporting of these emissions should not be required. Certification should be based on manufacturers' providing engineering evaluations and statements. [OAR-2009-0472-7123.1, pp.5-6]

If EPA believes further information is needed to assure that emissions of these substances do not increase, we urge the agency to work with auto manufacturers to pursue a research-type program to conduct testing of new vehicles for these substances. The level of testing for such a program would be less than that required if standards were adopted and would focus on technologies that EPA believes are most likely to produce higher emissions of the two substances. AIAM would be willing to support a request to Congress for additional budget resources for EPA to conduct such a program. As noted below, AIAM proposes a similar approach to address speculative concerns about in-use deterioration of greenhouse gas emissions and testing of air conditioning systems. [OAR-2009-0472-7123.1, p.6]

Notwithstanding the concerns expressed above, should EPA determine that nitrous oxide and methane regulation in some form are necessary, those substances should be regulated on a carbon dioxide-equivalent, fleetwide default basis, as California has done. In that way, manufacturers would have greater flexibility in choosing methods to achieve equivalent levels of greenhouse gas emission reductions. However, in the case of nitrous oxides, if EPA should adopt testing requirements, then significant lead-time is needed to address the measurement accuracy and quality control issues mentioned above. In the case of methane, current EPA test methods and required equipment allow the measurement of this gas; therefore, AIAM members are willing to voluntarily collect and report that information as part of certification testing. [OAR-2009-0472-7123.1, p.6]

Center for Biological Diversity

(v) EPA Should Seek to Reduce the Emissions of Nitrous Oxide and Methane, Rather Than Just Holding Their Emissions Constant

EPA proposes to hold emissions of greenhouse gases other than carbon dioxide (nitrous oxide and methane) to a constant level, rather than attempting to reduce these emissions, at zero cost to the auto industry. Proposed Rule, 74 Fed. Reg. 49511. The agency states that it has not identified "clear technical steps" available today to "significantly reduce" these emissions, 74 Fed. Reg. 49513. However, EPA fails to analyze whether *any* technologies are available to reduce these emission by *any* amount, and if so, what the costs and benefits might be. This failure is arbitrary and capricious. EPA justifies its position by pointing out that methane and nitrous oxide emission levels "are extremely low and represent only about 1% of total light vehicle GHG emissions." *Id.* However, particularly in light of the potent warming potential of both methane (25 times that of carbon dioxide over a 100 year period) and nitrous oxide (298 times that of CO2 over a 100 year period), that approach cannot be justified. Indeed, in its proposed Endangerment Finding, EPA has already rejected any claims that GHG emission reductions are unnecessary because their impact is relatively small: "Importantly, because no single greenhouse gas source category dominates on the global scale, many (if not all) individual greenhouse gas source categories could appear too small to matter, when, in fact, they could be very significant contributors in terms of both absolute emissions or in comparison to other similar source categories within the U.S." Endangerment Finding, 74 Fed. Reg. 18907. The Proposed Rule should be revised to remedy these deficiencies. [footnote] While we believe a CO2 equivalency standard is necessary and should be set, we also advocate for separate emission levels for all other greenhouse gases to allow more targeted application of relevant technologies. [OAR-2009-0472-7265.1, p. 18]

Chew, Yuli, Private Citizen

I favor a "technology-forcing" approach for proposed N2O and CH4 standards, similar to NMOG Standard in CARB's Regulation. For example, there are already CARB SULEV certified CNG / LPG vehicles, there is no reason to "cap" the standard at a static level of say, Tier 2 Bin 5. This will also ensure that more of the alternative fuel aftermarket engines can be retrofitted into used vehicles with equal to or better than the original standards. [OAR-2009-0472-7042.1, p.3]

Chrysler Group LLC (Chrysler)

N2O is currently not measured during certification testing and will require additional resources and test facility upgrades if standards are adopted. N2O is an insignificant portion of the exhaust composition of gasoline-fueled vehicles and is less than two percent of the total greenhouse gas contribution. The N2O standard as proposed could also pose an impediment to the widespread introduction of promising advance lean-bum technologies that have been demonstrated to reduce greenhouse gas emissions. [NHTSA-2009-0059-0124, p.38]

Recommendations:

Since N2O is a relatively insignificant vehicle greenhouse gas and requires additional analytical resources and costly test facility upgrades to measure, manufacturers should be provided with the option to use assigned values for a representative vehicle/fuel technology. [NHTSA-2009-0059-0124, p.38]

Clean Energy Fuels

EPA is proposing a methane (CH4) emissions standard or cap of 0.03 g/mi as measured on the Federal Test Procedure, to apply beginning with model year 2012 for both cars and trucks. EPA further believes that this level for the standard would be met by current gasoline and diesel vehicles, and 'would prevent large increases in future methane in the event that alternative fueled vehicles with high methane emissions, like some past dedicated compressed NGVs, become a significant part of the fleet.' However, EPA also notes that this source of emissions accounts for as little as 0.2% of the GHG gases from cars and light trucks. [OAR-2009-0472-7220.1, p.7]

Clean Energy is concerned that the notice appears to take the position that the cap is not technologically forcing but rather is meant to ensure methane emissions do not increase. The notice states that '[t]hese caps are designed to ensure that N2O and CH4 emission levels do not rise in the future, rather than to force reductions in the already low emission levels .... these standards are not designed to require automakers to make any changes in current vehicle designs.' At the same time, EPA appears aware that NGV s in the past have had much higher methane emissions than gasoline vehicles. EPA appears to be confident that controls necessary to meet the more demanding Tier 2 standards will result in lower levels of CH4 emissions for NGVs. But the notice offers up no data or citations to support these conclusions. Without the ability to review the same data that EPA is relying upon, we lack the confidence that EPA apparently has regarding the ability of NGVs to meet the proposed CH4 cap. As noted above, our research into this issue has not revealed any data showing that NGVs will meet the proposed cap. [OAR-2009-0472-7220.1, p.8]

Even if some NGVs can meet the cap, we believe adopting a CO2 equivalent average is warranted with methane and nitrous oxide emissions appropriately weighted for their global warming potential. Providing a CO2 equivalent approach as part of the rule would ensure that the caps do not become an obstacle to NGVs, while at the same time ensuring GHG emissions from such vehicles are no greater than for gasoline vehicles. Therefore, we strongly urge EPA and NHTSA to allow NGVs to meet an average standard that includes averaged emissions for CO2,

CH4, and N2O. If this is done, we are confident that NGVs will not only achieve the standard but surpass gasoline powered vehicles. Failure to adopt such a standard would seem illogical as the result would disallow vehicle strategies that could provide less overall GHG gas emissions on a WTW basis. [OAR-2009-0472-7220.1, p.8]

[[Clean Energy also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 137-139.]]

Cummins Inc.

EPA is proposing stand-alone N2O and CH4 standards for light-duty vehicles. Cummins recognizes that EPA is setting such standards to cap emissions of N2O and CH4 to ensure that these emissions do not increase in the future with the introduction of new CO2- reducing technologies. While Cummins supports the overall goal, we believe that EPA can achieve the same results with a less costly and less burdensome approach. The new standards would require that all manufacturers upgrade their facilities to measure N2O and CH4. The California Air Resources Board proposed a set value of N2O and CH4 emissions which manufacturers can use to calculate equivalent CO2 emissions from a vehicle. This approach makes sense since it is known that N2O and CH4 are a small percentage of overall greenhouse gas emissions from vehicles. This set value could be adjusted in the future if new GHG-reducing technologies increase the N2O and CH4 emissions compared to average values of N2O and CH4 emitted by current vehicles. This would also ensure that a new technology which reduces the overall GHG emissions is not prevented from entering the market because of the stand-alone N2O and CH4 standards. Cummins recommends that EPA adopts an approach similar to California to account for N2O and CH4 emissions. [OAR-2009-0472-7205.1, p.5]

Environmental Defense Fund

Just as important as EPA's choice to regulate light-duty vehicles is EPA's decision to include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and hydrofluorocarbons (HFCs) as regulated GHGs under the proposal rule which account for the preponderance of light-duty GHG emissions when weighted by global warming potential.[38] Whether these compounds are considered individually or collectively, EPA has a statutory duty to establish "standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."[39] See 42 U.S.C. §7521(a)(1). [OAR-2009-0472-7285.1, p. 10]

Ferrari S.p.a

CH4 is currently measured to determine NMHC emissions, whereas the N2O measurement requires additional instruments for emission laboratories, with increased costs. Since present emission control technologies for NOx emissions also tend to control N2O, there is no current basis for concluding that overall N2O emissions could increase in the future. The same conclusion could be drawn for methane. The burdens (laboratory update, testing, reporting)

associated with the measurement of tailpipe nitrous oxide is not justifiable in terms of costs/benefits analysis. For these reasons, we deem that it is not necessary to set these new additional exhaust standards for CH4 and N2O. [OAR-2009-0472-7214.1, p.3]

Ford Motor Company

We do not believe EPA is compelled to establish full useful life standards for N2O and CH4; the attachment addresses this in more detail. To the extent that EPA desires to pursue this issue nonetheless, the regulations could continue to allow manufacturers to make an 'engineering judgment' attestation - in lieu of formal compliance testing -- beyond just the first couple of years as proposed. Alternatively, EPA could establish generic emissions factors for N2O and CH4 and roll these into the proposed CO2 standard. [OAR-2009-0472-7082.1, Cover letter, p. 2]

As we continue to move towards an integrated approach that considers the vehicle, the fuel, and the consumer, it is worth highlighting other policies that could do more to reduce greenhouse gas emissions from actual in-use operation of motor vehicles compared to some of the additional requirements that EPA is proposing under this rulemaking. For example, EPA is proposing full useful life standards for CH4 (methane) and N2O (nitrous oxide) in addition to the fleet-average CO2 requirements. The relative contribution of methane and nitrous oxide to a vehicle's overall greenhouse gas emissions is small compared to CO2 - on the order of 1-3% and 0.3-0.4% respectively. The benefit of expanding the existing criteria pollutant emissions durability requirements to include these greenhouse gases is negligible, relative to other potential measures that could have a much more significant impact on actual in-use greenhouse gas emissions. [OAR-2009-0472-7082.1, Cover letter, p.]

Regulating Methane(CH4 and Nitrous-oxide (N20)

Ford does not support EPA's proposal to regulate CH4 and N20 as stand-alone greenhouse gases. It is well documented that CO2 comprises greater than 90% of the total greenhouse gas emissions from vehicles. There is a simple relationship between CO2 emissions and fuel economy for gasoline and diesel fueled vehicles. In addition, studies conducted by Ford and others in the research arena have shown that the relative contribution of methane and nitrous oxide to a vehicle's overall greenhouse gas emissions is small compared to CO2 - on the order of 1-3% and 0.3-0.4% respectively. Therefore, Ford does not support EPA's proposal to regulate CH4 and N20 as stand alone greenhouse gases.

In addition, regulating CH4 and N20 could have an unintended negative CO2 impact and severely limit, restrict, or legislate out of existence CO2-friendly technologies such as CNG, E85 (nominally 85% ethanol/15% gasoline), HCCI, pHCCI, lean gasoline, or clean diesel in the U.S. market. For example, a cap on CH4 could limit compressed natural gas technologies.

EPA is not compelled to establish not-to-exceed standards for N20 and CH4. Under Section 202 (a)(1) of the CAA, the Administrator has considerable discretion to determine whether or not an air pollutant 'causes or contributes' to an endangerment of public health and welfare and therefore regulation. EPA need not regulate every emission or substance no matter how small or inconsequential its effect. In Ethyl Corp. v. EPA, 541 F.2d 1, (D.C. Cir., 1976), the court

considered a similar issue under Section 211 of the CAA. The court held that even under a 'cumulative impact theory' in which all emissions of a substance are believed to contribute to an environmental problem, 'emissions must make more than a minimal contribution to total exposure in order to justify regulation under § 211 (c)(1)(A).' 541 F. 2d. at 31, note 62. Here, in light of the minor contributions of N20 and CH4 relative to that of CO2, we believe EPA has the discretion to refrain from regulating the emission of these substances from motor vehicles on the grounds that their overall contribution to GHG emissions is minimal.

To the extent that EPA desires to pursue this issue nonetheless, the regulations could continue to allow manufacturers to make an 'engineering judgment' attestation -- in lieu of formal compliance testing -- beyond just the first couple of years as proposed. Alternatively, EPA could establish generic emissions factors for N20 and CH4 and roll these into the proposed CO2 standard. According to the latest Intergovernmental Panel on Climate Change Radiative Forcing of Climate Change Report, the global warming potentials of N20 and CH4 are 296 and 23, respectively. Prior CARB analysis suggests that the average values for N20 and CH4 are 0.006 and 0.005. Based on this information, Ford recommends the following factor to be used to determine a carbon dioxide equivalent (CO2e) equation, in lieu of regulating CH4 and N20 as standalone components.

Recommended equation:

CO2e(gas) = CO2 (gas) + 296N20+23CH4

= CO2 (gas)+ 296 (0.006) +23 (.005)

=CO2 (gas) + 1.9 g/mi

[OAR-2009-0472-7082.1, pp. 11-12]

[Ford also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 15-16.]

[Ford also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 31-32.]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.90-96]

For example, EPA is proposing full useful life standards for CH4, methane, and N2O, nitrous oxide, in addition to the fleet average CO2 requirements. The relative contribution of methane and nitrous oxide to a vehicle's overall greenhouse gas emissions is small compared to CO2, on the order of 1 to 3 percent and 0.3 to 0.4 percent, respectively.

The benefit of expanding the existing criteria pollutant emissions durability requirements to include these greenhouse gases is minimal relative to other potential measures that could have a much more significant impact on actual in-use greenhouse gas emissions. Such measures would go beyond the vehicle's design.

For example, significant additional greenhouse gas emissions reductions could be achieved by reducing the carbon intensity of the nation's overall fuel supply through the introduction of alternative low-carbon fuels.

In addition, further reductions could also be achieved through more efficient transportation control measures designed to manage increased travel demand. These could include congestion mitigation initiatives, eco-driving education and awareness programs, and other incentives to encourage consumers to drive more efficiently.

We do not believe EPA is compelled to establish full useful life standards for N2O and CH4, and our written comments will address this in more detail.

To the extent that EPA desires to pursue these issues nonetheless, the regulations could continue to allow manufacturers to make an engineering judgment attestation in lieu of a formal compliance testing beyond just the first couple of years as proposed.

Alternatively, EPA could establish generic emissions factors for N2O and CH4 and roll these into the proposed CO2 standard.

Georgia Department of Natural Resources

Also, EPA states in the proposed rule that emissions of N2O and CH4 are low and that the rule is not designed to require technology to reduce emissions of N2O and CH4 at this time. EPA then justifies the inclusion of the proposed emission standards with the unsupported and conflicting statement that the agency is concerned about those emissions increasing in the future. Because of the enormous, unintended consequences of regulating GHG emissions under the Clean Air Act at this time, and because the proposed rule does not result in any emission reductions of N2O or CH4, EPA should not finalize any emission standards for N2O or CH4 as part of this rulemaking. [OAR-2009-0472-7150.1, pp.4-5]

Honda Motor Company

EPA requested comment on the idea of developing CO_2-equivalent emissions standard for model years 2012 through 2016. Honda is concerned that newer technologies currently under investigation (HCCI, direct injection and others) may be adversely affected by EPA's proposed cap. Since methane and nitrous oxide can easily be converted into CO_2-equivalent emissions, Honda recommends taking a CO2-equivalent approach which AIAM also recommends, and Honda supports. [NHTSA-2009-0059-0095.1, pp.6-7]

As the measurement of N_2O is phased-in, as recommended above, Honda suggests that EPA use a fixed number for CH_4 and N_2O emissions (e.g., 1.9 g/mile allowed by California Air Resources Board (CARB)). Additionally, the CO_2 standard needs to be adjusted upward to become a CO_{2e} standard, taking into consideration CH4 and N2O, for example, 250 grams/mile target for the 2016 fleet becomes 251.9. [NHTSA-2009-0059-0095.1, p.7]

IMPCO Technologies, Inc.

EPA Response to Comments

For over 50 years IMPCO has been the leader in the industrial, power generation and stationary engines sectors. At one time IMPCO was the leader in the U.S. automotive market, but has not been involved in this market segment for over 10 years. IMPCO is reentering the North American alternative fuel vehicle market. To confirm this commitment, in February IMPCO formed its US Automotive Operations Division, dedicated to the design, development, and certification of fuel systems that enable vehicles to operate on alternative fuels. This NPRM directly affects IMPCO's ability to enter the U.S. automotive market.

Fuel Systems Solutions, Inc. (Nasdaq: FSYS) is the holding entity for two companies: IMPCO Technologies, Inc. based in California, and BRC S.r.L. based in Italy. Both IMPCO and BRC are engaged in designing, manufacturing, marketing and supplying advanced products and systems to enable internal combustion engines to run on clean-burning gaseous fuels such as natural gas and propane. In 2008 alone, over 800,000 engines around the globe were converted to operate on these alternative fuels using IMPCO and BRC fuel systems.

EPA has proposed very stringent CH4 and N2O emissions standards for alternative fuel vehicles without using substantiating data from alternative fuel vehicles. Meeting these standards could require expensive catalyst design and validation, which would have a significant impact upon the time and cost involved to certify these alternative fuel systems.

Without sufficient evidence to demonstrate that the gasoline–specific and diesel–specific emissions data presented in the NPRM are representative of emissions from natural gas or propane vehicles, IMPCO proposes the following:

• Implement a CO2-equivalent greenhouse gas emission standard with an optional default N2O value; or
• Allow manufacturers to choose whether to meet a CO2–equivalent standard or meet separate CO2, CH4, and N2O emissions standards; or
• Postpone this NPRM as it applies to CH4 and N2O emissions standards for natural gas and propane vehicles until alternative fuel–specific data can be collected and evaluated IMPCO sincerely appreciates the opportunity to comment on the subject Proposed Rulemaking as this topic is of paramount importance to IMPCO and to the alternative fuel vehicle industry as a whole.

1. Implement a CO2-Equivalent Approach for Alternative Fuel Vehicles Given that the goal of this NPRM is to reduce greenhouse gases from light-duty vehicles, a CO2-equivalent approach is the most practical and cost–effective method in which to achieve this goal. Setting individual CH4 and N2O emissions standards does not help to achieve this goal. [OAR-2009-0472-7282.1, p.5]

2. N2O Emissions Standards – Aftermarket Vehicles IMPCO performs all of its vehicle emissions testing at outside laboratories. These laboratories are currently not capable of measuring N2O, therefore, IMPCO is relying on them to upgrade their equipment. One local laboratory will charge an additional $250 per emissions test to measure N2O. This will add several thousand dollars to the development and certification cost of the fuel system. Given the

inherently low total greenhouse gas emissions from natural gas and propane vehicles, directly measuring and controlling N2O will provide no environmental benefit.

IMPCO proposes that EPA offer an optional default N2O value that can be used in lieu of directly measuring these emissions. For example, the California Air Resources Board allows manufacturers to use N2O = 0.006 grams per mile in lieu of measuring N2O exhaust emissions. Alternatively, the GREET N2O emission factor of 0.012 grams per mile could be used. [OAR-2009-0472-7282.1, p.1]

Manufacturers of Emission Controls Association

While total N2O emissions are much lower than CO2 emissions, N2O is approximately 310 times more powerful than CO2 at trapping heat in the atmosphere. One of the anthropogenic activities producing N2O in the U.S. is fuel combustion in motor vehicles. In 2006, N2O emissions from mobile source combustion were approximately 9% of total U.S. N2O emissions. It is estimated that the N2O emissions account for about 2% of the total GHG emissions from a typical light-duty vehicle. N2O is emitted directly from motor vehicles and its formation is highly dependent on temperature and the type of emission control system used. Temperatures favorable for N2O formation are achieved inside catalytic converter systems, especially during cold-start conditions when engine exhaust temperatures are lower.

Catalyst efficiency and age are also important factors in N2O formation. At higher efficiencies and lower ages, N2O formation is lower. In addition to direct N2O emissions, NOx emissions from mobile and stationary sources have a significant impact on atmospheric N2O levels. On late model light-duty gasoline vehicles, modern three-way catalyst-based emission control technology combined with effective cold-start engine calibration strategies are very effective at controlling vehicle nitrous oxide emissions. Light-duty vehicle N2O emission tests results recently published by ARB and Environment Canada in *Atmospheric Environment* (vol. 43, 2009) indicate that vehicles certified to the lowest emission certification categories (e.g., certified to ARB's SULEV standards) also have extremely low N2O emissions (in the range of 0.0-1.5 mg/km).

Tightening of hydrocarbon and NOx emission standards over time with the parallel introduction of more effective emission control systems have resulted in lower emissions of N2O from today's vehicles compared to older vehicles certified to less stringent hydrocarbon and NOx standards. The performance of NOx emission control technologies for diesel vehicles such as SCR catalysts and lean NOx adsorber catalysts can also be optimized to minimize N2O emissions from diesel engines.

According to the United Nation's International Panel on Climate Change (IPCC), methane is more than 20 times as effective as CO2 at trapping heat in the atmosphere. Over the last 250 years, the concentration of CH4 in the atmosphere has increased by 148%. Methane is a byproduct of imperfect fuel combustion. Methane emissions from mobile sources are emitted from exhaust from vehicles using hydrocarbon fuels, but the anthropogenic contribution of road transport to the global methane inventory is less than 0.5%. Emissions of CH4 are a function of the type of fuel used, the design and tuning of the engine, the type of emission control system,

the age of the vehicle, as well as other factors. Although CH4 emissions from gasoline vehicles are small in terms of global warming potential when compared to N2O emissions, they can be high in natural gas-fueled vehicles, as methane is the primary component of natural gas.

On light-duty gasoline vehicles, modern three-way catalyst-based emission control technology is effective at reducing all hydrocarbon exhaust emissions including methane. Tightening of hydrocarbon emission standards over time with the parallel introduction of more effective emission control systems have resulted in lower emissions of methane from today's vehicles compared to older vehicles certified to less stringent standards. Catalyst designs can also be optimized in concert with engine control strategies to oxidize methane exhaust emissions from motor vehicles, including vehicles that operate exclusively on natural gas or bi-fuel vehicles that can operate on either natural gas or gasoline.

Advanced gasoline and diesel powertrains for light-duty vehicles in conjunction with advanced emission control technologies can be optimized to minimize emissions of both N2O and CH4 emissions. In their proposal, EPA has included an emissions cap for both N2O (a 10 mg/mi cap over the FTP test cycle) and CH4 emissions (a 30 mg/mi cap over the FTP test cycle) to ensure that climate change impacts of these two potent greenhouse gases are minimized on future light-duty vehicles. These proposed emission caps are absolute with no provisions for averaging among light-duty vehicles included in the proposal. MECA believes that these emission caps are achievable with today's light-duty vehicle powertrain options and should be included in the final EPA regulations.

Mercedes-Benz (Daimler AG)

DAG strongly supports the recommendations set forth by the Alliance of Automobile Manufacturers with regard to the proposed CH4 and N2O standards. The standards as proposed would have a deleterious impact on both clean diesel vehicles and direct-injection gasoline vehicles, as well as CNG vehicles. DAG welcomes the opportunity to work with EPA to develop data and analysis that can better support and define these standards and to ensure that appropriate facilities can be in place for testing and certification to these standards. DAG supports establishment of a focused research program to study a sample of vehicles rather than a reporting and testing program for all vehicles. Doing so would provide EPA with detailed and robust data on these GHGs while reducing time and cost burdens on manufacturers. [OAR-2009-0472-7193.2, p.21]

Mississippi Department of Environmental Quality

Also, EPA admits that emissions are low and that the proposed rule is not designed to require technology to reduce emissions of N2O and CH_4 at this time. EPA then justifies the inclusion of the proposed emission standards with conflicting statement that it is concerned about those emissions increasing in the future. Because of the enormous, unintended consequences of regulating GHG emissions under the Clean Air Act at this time, and because the proposed rule does result in any emission reductions of N2O or CH_4, EPA should not finalize any emission standards for N2O or CH_4 as part of this rulemaking. [OAR-2009-0472-7102.1, p.5]

Mitsubishi Motors R & D of America (MRDA)

Mitsubishi Motors does not support the new requirement to measure nitrous oxide (N2O) which will require the acquisition of expensive analyzers that are currently not available on the market. [OAR-2009-0472-7125.1, p.2]

EPA proposes a cap on N2O emissions with very little data on the amount of N2O actually emitted from vehicles. Additionally, it is unknown whether the stringency of the proposed cap will affect the introduction of any advanced technologies to improve fuel economy. Clearly, EPA should better understand N2O emissions before establishing standards. Therefore, we propose that EPA should conduct a research test program to determine whether standards are necessary and if so, the appropriate level and measurement method. [OAR-2009-0472-7125.1, p.3]

During their N2O emissions data collection, EPA should consider adopting the method proposed by California in their GHG regulations. This method creates a default value for N2O emissions, which would ease the increased expense and uncertainty Automakers would encounter developing a process to measure and report N2O emissions. Even though EPA has provided an extra year, i.e. MY 2013, before requiring N2O emissions to be reported, there are still many challenges for Automakers. Since true N2O emissions are unknown and not measureable, Automakers will find it difficult to state "vehicles meet the standard (cap) for MY 2012," especially if added enforcement of in-use or confirmatory N2O testing for MY 2012 will be required. Further, a full useful life standard for N2O emissions will require Automakers to conduct extensive test programs to establish deterioration factors – for a compound with an undetermined measurement method. MMC has serious practical concerns on how to measure N2O. [OAR-2009-0472-7125.1, p.3]

MMC currently does not own an appropriate N2O analyzer and has never measured N2O emissions at the levels proposed. There are a limited number of N2O analyzers marketed, none of which can accurately measure to the levels required in the proposed regulation. At this time, one leading analyzer manufacturer estimates at least one more year of research is needed before an appropriate measurement method will be determined. Then, a commercial analyzer will need to be developed. Consequently, to meet the current regulatory proposal, analyzer prices will be very high and delivery time will create a significant compliance risk. Analyzers are not the only instruments that will be needed for Automakers to measure N2O emissions - many other facility changes will be necessary, including software and computer upgrades requiring significant lead-time. [OAR-2009-0472-7125.1, p.3]

National Association of Clean Air Agencies (NACAA)

Fifth, we are pleased that EPA is seeking to establish standards that would control emissions of CO2, hydrofluorocarbons, nitrous oxide and methane from light-duty vehicles. However, we recommend that the agency also establish standards to regulate black carbon, which recent scientific evidence shows is another important pathway for climate change. [OAR-2009-0472-7071.1, p. 3]

Natural Resources Defense Council

Nitrous Oxide and Methane Emissions Should be Regulated by Standards that Apply to the Useful Life of Vehicles
NRDC strongly supports the proposed standards for nitrous oxide (N2O) and methane (CH4). According to EPA, these high global warming potential greenhouse gases account for 2.9 percent of emissions from cars and light duty trucks. Placing a standard on these emissions will ensure that their contribution does not grow, even with new technology introduction. EPA notes that inattention in the design of nitrogen oxides (NOx) emissions control technology, especially for lean burn gasoline and diesel engines, could result in increases in N2O. However, the tradeoff is not necessary and having a standard in place will signal to developers of control technology that N2O emissions must not increase. [OAR-2009-0472-7141.1, p. 11]

A standard on CH4 emissions is also critical to preventing emissions increases, especially if automakers produced more vehicles powered by natural gas. Today, CH4 can be controlled using catalyst control technology required for Tier 2 NMOG certification. However, unburned fuel from natural gas vehicles has the potential to slip by the catalyst causing CH4 emissions. We support EPA's proposal to set standards on CH4 emissions to ensure that engine and exhaust controls are maintained on future natural gas—and other vehicles—to prevent CH4 emission increases. [OAR-2009-0472-7141.1, pp. 11-12]

Standards on N2O and CH4 should apply for the useful life of the vehicles. Therefore, auto manufacturers should demonstrate that N2O and CH4 controls are have the durability to maintain emissions levels at or below the standard levels. [OAR-2009-0472-7141.1, p. 12]

NESCAUM

NESCAUM commends EPA for proposing to regulate nitrous oxide, methane, and hydrofluorocarbons in addition to CO2. These gases have very high global warming potential and as such should be regulated in addition to CO2. Carbon dioxide represents 95 percent of global warming emissions from light-duty vehicles, but nitrous oxide, hydrofluorocarbons, and methane are potent greenhouse gases, and thus it is appropriate that these gases should be controlled in addition to CO2. EPA's ability to regulate GHG emissions from all aspects of vehicle operation and all vehicle-related pollutants will maximize reductions from the national program. We ask, however, that the agency include other pollutants in the final rule such as black carbon which is a potent greenhouse forcing agent. Ozone is also a greenhouse gas, and while the pollutants that contribute to ozone are regulated under the Tier 2 program, there should be a mechanism to quantify the impact of ozone on global warming and to require more stringent standards if it is deemed necessary. At a minimum, we ask the agency to establish a mechanism to evaluate and include additional pollutants as scientific understanding of climate forcing agents evolves. [OAR-2009-0472-7235.1, p. 6]

New York University School of Law, Institute for Policy Integrity (IPI)

4) Caps for Methane and Nitrous Oxide

EPA proposes separate regulations imposing a per-vehicle cap on emissions of methane (CH4) and nitrous oxide (N2O), two potent GHGs, from cars and light trucks. EPA should rethink these

separate caps, and consider combining these gases into a single standard along with carbon dioxide (CO2) emissions, accounting for all gases on a CO2-equivalent basis. [OAR-2009-0472-7232.3, p. 16]

EPA's proffered justification for this policy choice is that vehicles produce CH4 and N2O "largely independent[ly]" of CO2, and that potential control technologies and strategies for these pollutant differ. EPA also notes that it lacks information on the emissions of CH4 and N2O from vehicles. [OAR-2009-0472-7232.3, p. 16]

Even if these gases are produced "largely" independently of one another, there is still some overlap as emissions of all these gases are caused by vehicles' combustion systems. Motor vehicles emit carbon dioxide during the fossil fuel combustion process. During combustion, the carbon stored in the fuels is oxidized and emitted as CO2 and smaller amounts of other carbon compounds. Motor vehicles emit methane through methane content in motor fuel, hydrocarbons passing uncombusted through the engine, and any post-combustion control of hydrocarbon emissions (such as catalytic converters). Motor vehicles produce nitrous oxide when nitrogen and oxygen react during fuel combustion. [OAR-2009-0472-7232.3, p. 16]

Current and future control technologies for these pollutants may overlap or may not. That is, however, irrelevant. EPA's goal in these regulations is to attempt to reduce global warming effects by reducing the amount of GHGs emitted by motor vehicles. In order to do this in the most efficient and effective way, EPA should create a single standard to allow manufactures the most flexibility in achieving GHG reductions to allow for the most cost-effective compliance. [OAR-2009-0472-7232.3, pp. 16-17]

EPA's proposed scheme limits manufacturers' ability to reduce GHG emissions in the most efficient way possible. For example, it may be cheaper for a manufacturer to produce a vehicle that emits additional methane but less carbon dioxide, rather than maintain the vehicle's current methane emission level and decrease CO2 emission only. EPA's goal is to achieve the most GHG reductions at the least cost, but the proposed regulations would not allow the manufacturer to opt for that cheaper option. [OAR-2009-0472-7232.3, p. 17]

Further, EPA's choice to introduce different rules for these two gases further complicates an already complex regulatory scheme, imposing more compliance costs on manufacturers. Manufactures must now comply with CAFE standards, carbon dioxide standards, methane standards, and nitrous oxide standards—and achieving reductions in one area cannot be counted toward meeting reductions in another area. A simpler and more efficient regulation would set one standard for all GHG emissions on a carbon-dioxide equivalent basis. [OAR-2009-0472-7232.3, p. 17]

It is unclear what additional information EPA needs to make this policy choice. As long as a single standard takes into consideration all GHGs produced by the vehicles and weighs them on a CO2-equivalent basis, that standard will not allow for any total GHG emission increase. [OAR-2009-0472-7232.3, p. 17]

NGV America

EPA Response to Comments

NGVAmerica and the Canadian Natural Gas Vehicle Alliance respectfully submit the following comments in regards to the U.S. Environmental Protection Agency's (EPA) proposed greenhouse gas emission standards for new light-duty vehicles. These comments arise from the concern that the proposed rules will seriously impact and inhibit natural gas vehicle production in North America to the detriment of realizing the environmental benefits of increased use of natural gas vehicles. Our organizations are very concerned that the proposed methane cap will discourage large manufacturers, including original equipment manufacturers (OEMs), from offering natural gas vehicles. We also are concerned about the negative impact the rules could have on aftermarket conversion manufacturers. While the proposed rules exempt small volume manufacturers of natural gas vehicles if they are small businesses, small volume manufacturers who are not small businesses are not exempt from coverage. Thus, in the case of aftermarket conversion manufacturers, the proposed rules could have the unintended consequence of discouraging large businesses from continuing to offer aftermarket conversion systems. [OAR-2009-0472-11310, p. 1]

NGVAmerica previously submitted comments on this issue prior to the close of the comment period. In its comments, NGVAmerica urged EPA to develop a carbon dioxide equivalent standard as opposed to a cap on methane and nitrous oxide emissions. We believe that a carbon dioxide equivalent approach is more appropriate. However, we would support a cap on methane emissions -- if properly structured. The comments submitted here underscore the importance of this issue to our associations, and come at a time when Canadian officials are considering similar regulations, largely based on EPA's proposed regulations. [OAR-2009-0472-11310, p. 1]

Based on discussions with EPA, it also has become evident that additional data could assist authorities in making a more reasoned decision. Therefore, these comments provide data recently collected from NGV manufacturers. [OAR-2009-0472-11310, p. 2]

If EPA does move forward with a methane cap, our primary concern with the proposed regulations is the plan to impose a cap of 0.03 gram per mile for CH4 emissions. EPA has indicated that the cap is designed to limit future emissions increases, primarily from natural gas vehicles, and prevent backsliding from current emissions levels by gasoline and diesel fueled vehicles. EPA's preamble also indicates that the cap on methane emissions is not designed to require automakers to make any changes to emission control designs. Moreover, EPA has indicated that proposed cap on methane emissions will have no economic impact on manufacturers. [OAR-2009-0472-11310, p. 2]

Comments
It is respectfully submitted that the proposed methane cap of 0.03 gram per mile is unreasonable with respect to dedicated and bi-fuel natural gas vehicles (NGVs). It appears that the decision to impose such a standard on natural gas vehicles has largely been made based on the current performance of gasoline- and diesel-fueled vehicles and *not*on the emissions performance of current NGVs. Based on data collected from NGV manufactures and provided below, we propose that a more appropriate standard for such vehicles is 0.5 g/mile. Although higher than that proposed by EPA, the cap we proposed would not negate the fact that NGVs produce less overall greenhouse gas emissions than petroleum fueled vehicles. As with gasoline- and diesel-

fueled vehicles, the methane level we propose would ensure that there is no backsliding with respect to current methane emissions from NGVs. [OAR-2009-0472-11310, p. 2]

Based on data collected from natural gas vehicle manufacturers, methane emissions for NGVs appear to fall within the range of about 0.1 - 0.4 g/mile -- an insignificant global warming potential compared to vehicles' CO2 production. The resulting increase in methane emissions for NGVs compared with that of other vehicles does not undermine the 20–30% reduction in CO2 values arising from use of these vehicles. Limiting the use of NGVs through an unreasonable cap, therefore, would be counterproductive to reducing greenhouse gases compared with the environmental benefits of their increased use. [OAR-2009-0472-11310, p. 2]

It is evident that EPA did not have access to representative CH4 emissions data for NGVs. NGVAmerica and the Canadian Natural Gas Vehicle Alliance have therefore assembled a set of emissions data from North American manufacturers, representative of the industry norm for CH4 emissions. The emissions data covers both dedicated and bi-fuel NGVs from MY 2005–MY 2009. [OAR-2009-0472-11310, p. 2]

Table 1 [See OAR-2009-0472-11310, p. 5 for Table 1] shows the useful life NGV emissions by model year, model, and fuel configuration for CH4, CO2, and N2O emissions for a representative sample of five vehicles. The Table includes data with global warming potential factors applied to CH4 and N2O emissions, resulting in total global warming potential of all emissions in g/mile, and the percentage increase in the total global warming potential compared to the CO2 baseline. [OAR-2009-0472-11310, pp. 2-3]

Table 2 [See OAR-2009-0472-11310, p. 6 for Table 2] shows CH4 and CO2 emissions data from 16 representative bi-fuel MY07–09 NGVs, including CO2e/CO2 ratios. [OAR-2009-0472-11310, p. 3]

Table 3 [See OAR-2009-0472-11310, p. 7 for Table 3]shows CH4 and CO2 emissions data from 6 representative MY06–09 dedicated NGVs, including CO2e/CO2 ratios. [OAR-2009-0472-11310, p. 3]

Two significant conclusions can be drawn from this data. The first is that the industry norm, covering both bi-fuel and dedicated NGVs, is 0.1–0.4 g/mile CH4. The second is that, at these levels, the increase in global warming potential created by CH4 and N2O from natural gas vehicles is in the order of 1% over that of CO2 alone. This should be compared against the 20–30% reduction in total global warming potential realized by NGVs compared with gasoline vehicles. [OAR-2009-0472-11310, p. 3]

Reducing CH4 emissions from these values would create a significant economic impact on manufacturers, with minimal environmental benefit, and cause changes to current designs, including replacing OEM catalysts with expensive methane specific catalysts having higher loadings of precious metals. EPA has indicated that it does not intend the caps to impose additional costs or require new emission controls. With respect to methane and nitrous oxide emissions, EPA's preamble acknowledges that it "has not identified clear technological steps

available to manufacturers today that would significantly reduce current emission levels." [OAR-2009-0472-11310, p. 3]

Conclusion
NGVAmerica and the Canadian Natural Gas Vehicle Alliance urge EPA to give full consideration to these comments and accordingly modify its proposed regulations with respect to natural gas vehicles. Based on the industry norm of CH4 emissions data shown above, and recognizing that manufacturers normally calibrate to certify their emissions at about 50% of the standard, we urge EPA to adopt a CH4 cap at 0.5 g/mile methane for natural gas fueled vehicles. This proposal is in line with the logic followed by EPA with respect to the limits it has proposed for such emissions from gasoline vehicles. This will allow manufacturers to continue to produce NGVs on an economic basis, without any backsliding, while providing significant greenhouse gas reductions. [OAR-2009-0472-11310, p. 4]

With respect to methane emissions (CH4) and nitrous oxide (N2O) emissions, EPA has proposed a cap, limiting CH4 emissions for all vehicles to no more than 0.030 g/mi and N2O emissions to 0.010 g/mi. With respect to these two pollutants, manufacturers are not free to sell vehicles with emission higher than the cap. In addition, the proposed regulations do not allow manufacturers to use CO2 reductions to offset higher CH4 or N2O emissions. [OAR-2009-0472-7236.1, p.6]

NGVAmerica has several concerns with respect to the CH4 and N2O caps proposed by EPA. Providing an average for CO2, while imposing a cap on other greenhouse gas emissions, goes against the trend in how most analyses look at greenhouse gas emissions. In fact, California opted for a CO2-equivalent average that included CO2, methane, and nitrous oxide emissions. We believe an averaging approach is optimal if the goal is reducing greenhouse gas emissions. We also are concerned that the proposed regulation focuses exclusively on tailpipe emissions and ignores the upstream emissions or full fuel cycle impacts of operating motor vehicles. The focus on tailpipe emissions might be necessary in terms of the actual regulation but upstream emissions should not be ignored. As indicated above, NGVs provide real reductions in terms of full fuel cycle greenhouse gas emissions when compared with gasoline vehicles. This is especially true with respect to renewable natural gas. These benefits should be taken into account when deciding whether to allow averaging of different pollutants and also when developing the credit program. As currently proposed, it is not clear that the benefits of NGVs will be delivered if the caps imposed on methane emissions are adopted. [OAR-2009-0472-7236.1, p.6]

Based on a search of available emission studies, NGVAmerica could not find any instances of NGVs able to meet the proposed CH4 limit of 0.030 g/mi – despite having significantly less CO2-equivalent tailpipe emissions when methane and nitrous oxides are included. A review of the results from the GREET model's full-fuel cycle analysis further indicates that typical NGVs are unlikely to be able to meet the proposed cap. GREET currently estimates that vehicle related emissions of methane are about 0.146 g/mi for dedicated NGVs. Thus, it appears that the current proposal could be prohibitive for manufacturers wanting to produce and sell NGVs in the U.S. It is not clear whether EPA has fully considered the proposed rules impact on NGVs. The rule does provide ample discussion of the issue, however, it is not clear what data EPA is relying upon for its conclusions and it is not clear whether the conclusions regarding the ability to meet the

methane cap apply to NGVs or whether these conclusions pertain to gasoline powered vehicles. [OAR-2009-0472-7236.1, pp.6-7]

EPA's notice indicates that the intent of the caps is to ensure that emission levels of these pollutants do not increase as CO2 emissions are reduced. EPA also indicates a number of times that the imposition of the caps is not intended to be technology forcing. At the same time, EPA appears aware that NGVs in the past have had much higher methane emissions than gasoline vehicles. EPA appears to be confident that controls necessary to meet the more demanding Tier 2 standards will result in lower levels of CH4 emissions for NGVs. But the notice provides no data or citations to support these conclusions. Without the ability to review the same data that EPA is relying upon, we lack the confidence that EPA apparently has regarding the ability of NGVs to meet the proposed CH4 cap. As noted above, our research into this issue has not revealed any data showing that NGVs will meet the proposed cap. [OAR-2009-0472-7236.1, p.8]

Even if some NGVs can meet the cap, we believe adopting a CO2-equivalent average is warranted with methane and nitrous oxide emissions appropriately weighted for their global warming potential. Providing a CO2-equivalent approach as part of the rule would ensure that the caps do not become an obstacle to NGVs, while at the same time ensuring greenhouse gas emissions from such vehicles are no greater than for gasoline vehicles. Therefore, we strongly urge EPA to allow NGVs to meet an average standard that includes averaged emissions for CO2, CH4, and N2O. If this is done, we are confident that NGVs will not only achieve the standard but surpass gasoline powered vehicles. [OAR-2009-0472-7236.1, p.8]

CARB currently allows manufacturers to use a static value of 0.006 g/mi for N2O emissions instead of requiring direct measurement of such emissions. Since N2O is currently not measured over the federal test procedures for emissions and since many emission testing shops are unlikely to have such equipment for several years, it would be advisable to accept the CARB default measurement. This is necessary because the aftermarket industry relies on emission testing facilities operated by other businesses. While the new rule appears to require facilities to upgrade equipment in order to be able to test for N2O emissions, aftermarket conversion system suppliers are concerned that they will be unable to satisfy the new N2O requirements if businesses they rely on for emission testing do not acquire the necessary equipment. Therefore, in lieu of requiring testing for N2O emissions, we urge EPA to allow the use of the default figure used by CARB. [OAR-2009-0472-7236.1, pp.8-9]

State of New Jersey

The Department is supportive of the USEPA's proposed approach to regulate methane (CH4) and nitrous oxide (N2O) by means of per-vehicle emission standards that would act to cap emissions for model years 2012 through 2016 at the current levels. The USEPA's proposal to separately regulate methane for the first time is a particularly important initial step to ensure that this high global warming potential gas is controlled in the transportation sector. [OAR-2009-0472-7109.1, pp.9-10]

Toyota Motor North America

Toyota has concerns with setting separate emission standards for N2O and CH4 proposed by EPA. The proposed level only serves as a backsliding measure and offers little in terms of GHG reduction benefits. Furthermore, Toyota is concerned with the prospect that these standards may inhibit future technology introduction needed to comply with this regulation. Specifically, EPA should not set the proposed N2O cap standard because emissions from direct injection lean burn and diesel engines tend to be higher and these technologies were not considered in developing the cap. EPA should not set the CH4 cap standard because it may exclude the introduction of CNG technology as a means to mitigate CO2. If EPA does intend to move forward with a CH4 standard, Toyota would like EPA to strongly consider allowing exemption for carryover vehicles. [OAR-2009-0472-7291, p.9]

Instead of separate emission standards, Toyota suggests EPA incorporate N20 and CH4 into a fleet average calculation. The fleet average adjustment would resemble the AB 1493 calculation of: {CO2 + 296 x N2O + 23 x CH4} . For N2O, Toyota proposes to use a constant value (i.e. N2O = 0.006 grams/mile, per AB1493). Merits of the fleet average proposal include the fact that the fleet average does not obstruct the introduction of specific technologies that may be needed to comply with EPA's rule. Toyota's proposal to use the N2O concept also eliminates the challenge of N2O measurement accuracy at the proposed level of .010 gram per mile. [OAR-2009-0472-7291, p.9]

EPA proposes a per-vehicle N2O emission standard, measured over the FTP, which would become effective in 2012MY. EPA believes that current technology gasoline vehicles can meet the standard at no cost and acknowledges that diesels may have modest associated costs to meet the standard. EPA acknowledges the short lead time for facility upgrades necessary for N2O measurement and will allow a compliance statement for 2012MY. [OAR-2009-0472-7291, p.8]

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy

Standards for Non-CO2 GHGs

We support the EPA's proposal to cap non-CO2 GHG emissions at their current levels—CH4 at 0.030 g/mile (p. 49525) and N2O at 0.010 g/mi (p. 49524)—due to their respective multiplicative global warming potential of 21 and 310 times greater than CO2. The emissions of N2O and CH4 contribute significantly to total CO2-equivalent emissions of GHGs from the lifecycle of conventional and alternative transportation fuels and technologies. Emissions from these potent GHGs vary significantly depending on a number of factors, including the type of fuel consumed. As Table 1 illustrates [See OAR-2009-0472-7188.1, p. 7 for Table 1], N2O and CH4 jointly account for approximately 15% of the lifecycle CO2-equivalent GHG emission impacts from conventional gasoline vehicles, and more than 29% from some alternative fuel vehicles. [OAR-2009-0472-7188.1, p. 6]

Unlike CO2, CH4 and N2O are a function of many complex dynamics, such as the combustion pressure, temperature, and air-to-fuel ratio, the type of fuel used, as well as the age and type of emission control systems operating. CH4 and N2O emissions cannot be derived from one or two basic characteristics of a fuel, thus the EPA's plan to measure CH4 and N2O emissions during the CAFE tailpipe test will ensure a more accurate assessment. [OAR-2009-0472-7188.1, p. 7]

Placing a cap on non-CO2 GHG emissions at current levels and disallowing fleet averaging or emission-level trading is a straightforward means of assuring that CH4 and N2O levels do not increase per vehicle. This approach, as opposed to embedding non-CO2 GHG emissions as CO2-equivalent emissions in the ruling, discourages manufacturers from making other changes to avoid delivering significant CO2 reductions. [OAR-2009-0472-7188.1, p. 7]

Vehicle age affects N2O and CH4 emissions. Sasaki and Kameoka found that older vehicles produced much higher emissions than newer vehicles with similar emission control equipment. In this study, the oldest vehicle tested (which had an odometer reading of 52,000 km) produced several times the N2O emissions of the newest vehicle (with only 1,000 km of use). Lipman & Delucchi research also suggests that for most fuels—both nonpetroleum and petroleum based fuels—CH4 emissions increase with the age of the catalyst. Based on these findings, it becomes increasingly important to test CH4 and N2O emissions over the vehicle lifetime, and we recommend these tests be included and reported as part of the In-Use Verification Program (IUVP). While the EPA claims not to have 'sufficient data' to determine the appropriate thresholds for CO2, N2O, and CH4 emissions, we do not agree with excluding these emissions from the In-Use Confirmatory Program (IUCP). Given that the goal of this ruling is to reduce overall GHG emissions, and the fact that this decision will have ramifications for many years to come, it is important the EPA ensure that the fleet maintains, within reason, the standards established in this ruling. [OAR-2009-0472-7188.1, p. 7]

While we encourage the EPA to enforce the cap on CH4 and N2O emissions, we also recommend that the EPA remain flexible with regard to possible future technologies. New technologies may significantly reduce the level of carbon dioxide while slightly increasing CH4 or N2O, but result in a net reduction to overall CO2 emissions equivalents. This is due to the characterization factors assigned to CH4 and N2O, as shown in the following: [OAR-2009-0472-7188.1, p. 7]

CO2 emission standard/footprint > 21 * ΔCH4 + 310 * ΔN2O + -ΔCO2

For instance, a technology change in air conditioning could improve fuel consumption by as much as 20%, thus reducing not only pressure on fuel sources, but also emissions of CO2 and other tailpipe emissions. However, it may be denied employment despite the offsetting effects of reductions to fuel consumption due to a small non-CO2 increase in GHGs directly from use. If the impacts from CH4 and N2O are increased, but the total emission of CO2-equivalent is lowered by using the new technology, the technology should be permitted. However, all emissions must remain below the approved CAFE standards for the proposed year. [OAR-2009-0472-7188.1, p. 7]

[The following comments are from LA Testimony, OAR-2009-0472-7283, pp.118-119]

Our third point concerns standards for non-CO2 GHGs. We support the EPA's proposition to cap methane and nitrogen dioxide at current levels due to their respective multiplicative global warming potential of 21 and 310 times greater than CO2 according to the IPCC.

EPA Response to Comments

We agree that the cap on methane and nitrogen dioxide is more effective than using CO2 equivalency measures as such measures dilute the primary goal of reducing CO2.

However, we ask that the EPA remain flexible with regard to possible future technologies that might reduce the level of carbon dioxide while increasing methane and nitrogen dioxide or vice versa but result in a net reduction in global warming potential. However, total CO2 emissions must remain below the approved CAFE standards for the proposed year.

Given the potency of methane and nitrogen dioxide in contributing to climate change, we also request the inclusion of incentives, such as a credit system, for reducing nitrogen dioxide and methane emissions below the proposed cap as a means to motivate innovation in clean technologies.

Volkswagen Group of America (Volkswagen)

Volkswagen does not believe standards for CH4 and N2O are necessary or warranted, at least in the timeframe of this rulemaking. As EPA points out in the NPRM, the contributions from N2O (2.7%) and CH4 (0.2%) to the total GHG emissions attributed to passenger cars and light-duty trucks is small. In addition, Volkswagen is concerned that the levels proposed by the EPA could result in precluding some future powertrain concepts with significant C02 reduction potential. Initial test results Volkswagen performed on a CNG vehicle and a flexible fuel concept indicate that the CH4 standard as proposed by EPA may prevent future certification of alternate fuel vehicles. Additionally the N2O results as measured on the CNG concept shows a variability which needs to be investigated in detail. [OAR-2009-0472-7210.1, p.2]

With the test results above, Volkswagen believes that more data are necessary to set a reasonable and appropriate CH4 standard. It appears the CH4 standard in the NPRM is derived from the EPA's database but is focused on conventional concepts only. The source for the N2O standard proposed is not obvious but the first test results on an alternate vehicle concept using CNG indicate that more data specifically on these concepts are necessary. Based on these results Volkswagen strongly recommends to postpone the standards in the current CO2 proposal and delay regulatory actions on CH4 and N2O to a later point, allowing more time for engineering evaluation on possible and appropriate standards. As initially stated, it is possible these cap standards may be challenging for certain concepts with significant CO2 reduction potential. [OAR-2009-0472-7210.1, p.6]

The cap standards as proposed by EPA are full useful life standards. These will result in manufacturers establishing deterioration factors and a certification level lower than the proposed standards. We question the usefulness of the proposed cap standards. [OAR-2009-0472-7210.1, p.6]

Also, by EPA's admission there is not a large amount of data available for these emission compounds. In EPA's Memorandum to the Docket dated November 19,2009 entitled, 'Derivation of Proposed N2O and CH4 Cap Standards' (Docket EPA-HQ-OAR-2009-0472), EPA acknowledges that there is little data available regarding CH4 and N2O. For this additional reason Volkswagen suggests delaying consideration of standards for N2O and CH4 until more

emission data is available and a better understanding of trade-offs with CO2 reduction strategies is available. EPA notes it is concerned with the possibility of increased CH4 and N2O emission levels in the future and suggests that the proposed standards would act as caps to prevent future increases. Volkswagen maintains there is time to examine this issue in more detail and still issue standards in the future if an increase In these emissions is noted or a future cap is warranted. [OAR-2009-0472-7210.1, p.6]

In addition, addling standards for N2O and CH4 result in a testing burden. As EPA notes, new test equipments is required to measure N2O. [OAR-2009-0472-7210.1, p.6]

As discussed, due to the small GHG impact, the possible challenges to alternative fuel vehicles, the lack of test data, the in-use compliance issues, and the increased test burden, we recommend EPA postpone setting standards for N2O and CH4 until more study of the overall impact of such standards is understood. [OAR-2009-0472-7210.1, p.7]

If EPA is compelled to account for CH4 and N2O emissions, Volkswagen supports the Alliance comments that a CO2 equivalent factor is appropriate. The application of a factor at least eliminates concerns regarding test burden and in-use issues. [OAR-2009-0472-7210.1, p.7]

Volvo Car Corporation

EPA requests comments on N2O and CH4 emission standards. Given the insignificant contribution of N2O and CH4 from vehicles and the burden of implementing such standards, VCC supports the Alliance proposing that EPA instead rely on the use of a factor to account for these emissions. This approach would enable introduction of certain vehicle technologies that have an overall GHG benefit. [OAR-2009-0472-7168.1, p.7]

EPA Response

N_2O and CH_4 Standards – General

EPA received many comments on the proposed N_2O and CH_4 "cap" standards. A range of stakeholders supported the proposed approach of "cap" standards and the proposed emission levels, including most states and environmental organizations that addressed this topic. These commenters stated that EPA needs to address all mobile greenhouse gases under the Clean Air Act, and N_2O and CH_4 are both more potent contributors to global warming than CO_2. The Manufacturers of Emissions Controls Association (MECA) was also supportive.

EPA agrees with the NGO, state, and other commenters that light-duty vehicle emissions of these two compounds are currently small but important contributors to the U.S. inventories of emissions. As discussed in detail in Section III.A.2 of the preamble, under section 202(a) (1) the Administrator has significant discretion in how to structure the standards that apply to the emission of the air pollutant at issue here, the aggregate group of six greenhouse gases, including N_2O and CH_4. EPA has the discretion under section 202(a) (1) to adopt separate standards for each gas, a single composite standard covering various gases, or any combination of these. In this rulemaking EPA is finalizing separate standards for nitrous oxide and methane, and a CO_2

standard that provides for credits based on reductions of HFCs, as the appropriate way to issue standards applicable to emission of the single air pollutant, the aggregate group of six greenhouse gases.

Some auto industry commenters proposed that EPA not set standards at this time, but rather, organize a government-industry test program to better understand N_2O emissions characteristics and controls. Since as discussed below the cap standards we are establishing are well above most emission levels of most current conventional vehicles, we do not believe that there is a need to delay the setting of standards while gathering additional data. In the future, further such research could be warranted if EPA were considering more stringent, technology-forcing standards.

Stringency of the N_2O and CH_4 "Cap" Standards

A number of commenters, primarily auto manufacturers, expressed concerns that the levels of the proposed cap standards for N_2O and CH_4 could pose technological challenges for some vehicle technologies and potentially restrict the development of some technologies that could reduce overall GHG emissions. Auto industry commenters, including the Alliance and AIAM, were concerned that the N_2O standard could impede the introduction of, for example, lean-burn gasoline and diesel technologies. Also, these organizations, as well as natural gas vehicle advocates, were concerned that the CH_4 standard could impede the expanded production and sale of CNG or LNG vehicles.

Notably, the focus of these organizations' concerns about the stringency of the standards is on alternative technologies and fuels, not on conventional vehicles. As we discuss in detail in Section III.B.7 of the preamble, EPA's intent was to establish the cap standards at levels consistent with those seen in the vast majority of conventional gasoline and diesel vehicles, which we expect to be able to comply with little or no new technological effort or expense on the part of auto manufacturers.

However, we recognize that, in the absence of a limitation, the potential for significant emission increases exists with the evolution of new vehicle and engine technologies or the expanded penetration of existing low-production technologies into the fleet. Indeed, several industry commenters concede as much in stating that they are contemplating introducing vehicle technologies that could result in emissions exceeding the cap standard levels. For example, Volkswagen provided limited data on compressed natural gas (CNG) and FFV concept cars and NGV America provided limited data on several vehicles (although some of these were vehicles certified as heavy-duty vehicles, so those results are not relevant to this rule). These data generally show higher N_2O and/or CH_4 levels than current gasoline and diesel vehicles. The organizations submitting this data do not specify any new or improved emission control technologies that could be applied to these vehicles, or how costly such improvements might be. Clearly, manufacturers wishing to introduce or significantly expand production of vehicles incorporating some of these alternative vehicle or fuel technologies may need to make improvements, or make use of the optional CO_2 equivalent compliance approach described below, in order to achieve N_2O and/or CH_4 emission levels similar to conventional gasoline vehicles and meet the cap standards. Given this lack of information and the availability of a

CO_2-equivalent compliance option, as described below, EPA does not ascribe costs to the N_2O and CH_4 cap standards.

Although the overall GHG program that EPA is establishing is designed to encourage innovative technological responses to GHG standards, our general intent is not to trade off emissions of one GHG for another. We recognize that catalytic NOx control technologies can maintain or reduce N_2O emissions in certain cases – for example, NOx control approach used on current Tier 2-compliant diesel vehicles do not tend to favor the formation of N_2O emissions – while in other cases these technologies can also increase N_2O emissions. Diesel cars and light trucks with advanced emission control technology, for example, are in the early stages of development and commercialization. To the extent that this segment of the vehicle market develops, the N_2O standard could require these manufacturers to incorporate control strategies that would minimize N_2O formation above the cap standard. (Available approaches for these vehicles may include using electronic controls to limit catalyst conditions that might favor N_2O formation and consideration of different catalyst formulations.) Although some of these approaches may have modest associated costs, EPA believes that they will be small compared to the overall costs of the advanced NO_X control technologies already required to meet Tier 2 standards. In any event, these phenomena are not well understood or easily predictable today.

Similarly, hydrocarbon control catalysts can be designed to reduce CH_4 emissions – for example, Honda has certified a dedicated CNG vehicle for several years with CH_4 emissions well below the new CH_4 cap standard – while some designs of natural gas and ethanol fueled vehicles can produce higher levels of CH_4 emissions than do similar gasoline fueled vehicles. Thus, the cap standards we are establishing for both N_2O and CH_4 are meant to encourage developers of new vehicle technologies to address all vehicle GHG emissions simultaneously as these technologies enter the market more broadly (e.g., N_2O control for lean-burn combustion technologies, and CH_4 controls for natural gas or ethanol fuel technologies.) For each of these potential of existing (low-production) vehicle and fuel technologies, there are as yet no clear indications from manufacturers for significant production plans.

As the data from commenters above reinforces, some new technologies would need more technological effort to reach the cap standards than others. Also, as discussed below, manufacturers have raised concerns about test burdens. For these reasons, the final rule includes an approach to N_2O and CH_4 standards providing an optional pathway to compliance if a manufacturer chooses to market a vehicle with N_2O and/or CH_4 emissions approaching or exceeding the cap standards. The final regulations thus allow a manufacturer to use an optional CO_2-equivalent approach, as suggested by several commenters. In the proposal, EPA sought comment on an approach of expressing N_2O and CH_4 in common terms of CO_2-equivalent emissions and combining them into a single standard along with CO_2 emissions. 74 FR at 49524. (California's "Pavley" program adopted such a CO_2-equivalent emissions standards approach to GHG emissions.) Several auto industry commenters and the Institute for Policy Integrity (NYU) supported this type of compliance approach. In lieu of complying with the separate N_2O and CH_4 cap standards, the compliance alternative allows a manufacturer (including manufacturers that convert vehicles to alternative fuels) to choose to convert its N_2O and CH_4 test results (or, as described below, substitute a default N_2O value for MY 2012-2014) into CO_2-equivalent values and add this sum to their CO_2 emissions. To avoid issues of

consistency across a manufacturer's product line, a manufacturer choosing this option for one test group will need to apply this approach to all of the test groups in its fleet. This approach is more environmentally protective overall than the cap standard approach, since the manufacturer will need to reduce its CO_2 emissions to offset the higher N_2O (and/or CH_4) levels, but will not be allowed to increase CO_2 above its footprint target level by reducing N_2O (or CH_4). Manufacturers using the compliance alternative to address N_2O and/or CH_4 challenges with an alternative vehicle or fuel technology should face no additional compliance costs. This is because in most cases the alternative vehicle and fuel technologies would likely result in CO_2 levels lower than comparable conventional vehicles, and so could comply without additional expenditures on controls of N_2O or CH_4 emissions.

The N_2O and CH_4 values to be used in the optional CO_2-equivalent formula will be the measured emission values for these GHGs, except N_2O in model years 2012 through 2014. For these model years, in response to manufacturer testing concerns discussed below, manufacturers may use a default N_2O value of 0.010 g/mi, the same value as the N_2O cap standard. For MY 2015 and later, the manufacturer would need to provide actual test data on the emission data vehicle for each test group. (That is, N_2O data would not be required for each model type, since EPA believes that there will likely be little N_2O variability among model types within a test group.) EPA believes that its selection of 0.010 g/mi as the N_2O default value is an appropriately protective level, on the high end of current technologies, as further discussed in Section III.B.7 of the preamble.

Two commenters, the Center for Biological Diversity (CBD) and a private citizen, supported more stringent cap standards. CBD commented that in light of the potency of these compounds, EPA should develop standards that do not just maintain current levels, but reduce emissions over current levels and that EPA had not analyzed either the technologies or the costs of doing so. EPA did not propose and is not prepared at this time to establish "technology forcing" standards for N_2O and that would require manufacturers to reduce emissions of these compounds below the levels generally seen in current conventional gasoline and diesel vehicles. We believe that the stringent Tier 2 program and the associated NO_X fleet average requirement already result in significant N_2O control in conventional gasoline vehicles, and the agency does not expect current N_2O levels to rise for these vehicles. Moreover, EPA believes that the CO_2 standards will be challenging for the industry and that these standards should be the industry's chief focus in this first phase of vehicular GHG emission controls.[3] Further, to reduce current emissions would result in costs that would need to then be included in the overall economic impacts of the program and accounted for in establishing a different, potentially less stringent CO_2 standard. Although as discussed above we recognize that some technological approaches may exist for vehicles with alternative fuel and vehicle technologies to address N_2O or CH_4 emissions above the cap standards, we are not aware of technologies that could in the time frame of this rule reduce these emissions significantly and consistently below the cap levels, since this could require broad improvements to gasoline vehicle emission controls across the fleet. The

[3] See Massachusetts v. EPA, 549 U.S. at 533 (EPA has significant discretion as to timing of GHG regulations); see also Sierra Club v. EPA, 325 F. 3d 374, 379 (D.C. Cir. 2003) (upholding anti-backsliding standards for air toxics under technology-forcing section 202 (l) because it is reasonable for EPA to assess the effects of its other regulations on the motor vehicle sector before aggressively regulating emissions of toxic vehicular air pollutants.

commenters do not suggest any technologies that could do so. EPA could revisit this decision in the future if such technologies emerge.

Test Burden Issues for N_2O

Auto manufacturers were almost unanimous in raising concerns about the impacts of a new testing requirement for N_2O on their test facilities, equipment, and procedures. On the other hand, there were very few concerns about new burdens for CH_4 testing. This disparity in comments can be explained by the fact that manufacturers have historically developed CH_4 testing capability and experience for a number of purposes, including compliance with non-methane organic gases (NMOG) standards. Thus, for CH_4, the new CH_4 cap standard will not result in new test burdens.

We recognize that N_2O testing will be new to most manufacturers. However, we do not believe that such testing will impose unreasonable new burdens, especially in relation to the cost of complying with the overall GHG standards. As discussed in Section III.B.7 of the preamble, N_2O measurement equipment capable of accurate measurement of emissions in the range of the cap standard is now readily available at costs that, while not trivial, are not unreasonable compared to other traditional emission measurement equipment. For example, EPA in the last two years has purchased and installed cost-effective photo-acoustic analysis equipment and has been using it successfully for N_2O and other testing. Manufacturers ,may need to modify their test facilities and patterns of testing to integrate N_2O testing into their emission testing programs, but again, these changes are not unusual and will not be excessively costly in most if not all cases.

Still, given the relatively short lead-time before the N2O cap becomes effective and the newness of N_2O testing to this industry, EPA proposed that manufacturers be able to apply for a certificate of conformity with the N_2O standard for model year 2012, provided that they supply a compliance statement based on good engineering judgment. Under the proposal, beginning in MY2013, manufacturers would have needed to base certification on actual N_2O testing data. This approach was intended to reasonably ensure that the emission standards are being met, while allowing manufacturers lead time to purchase new N_2O emissions measurement equipment, modify certification test facilities, and begin N_2O testing. After consideration of the comments, EPA agrees with manufacturers that one year of additional lead-time to begin actual N_2O measurement across their vehicle fleets may be still be insufficient for manufacturers to efficiently make the necessary facility changes and equipment purchases. Therefore, EPA is extending the ability to certify based on a compliance statement for two additional years, through model year 2014. For 2015 and later model years, manufacturers will need to submit measurements of N_2O for compliance purposes. We believe that this additional leadtime before testing is required also addresses more detailed technical concerns manufacturers raised about N_2O testing early in the program.

Other Comments

Some manufacturers raised questions and concerns about how EPA could best address potential deterioration of emissions of N_2O and CH_4 over the life of the vehicles. Although

catalytic emission control systems generally deteriorate in effectiveness over time, EPA is not aware of information on current technology vehicles that would allow specific conclusions on the degree of emissions deterioration. (One commenter, the Bren Working Group at UC Santa Barbara, referenced studies from 1992 and 2002 that indicated that vehicles of those relative eras showed significant deterioration of N_2O and CH_4, respectively.) EPA believes that some degree of emissions deterioration in current catalytic control systems is likely, but given the limited information available on current technology vehicles, we are not able to determine appropriate independent values for such deterioration. However, we are not aware of information on current vehicles that would indicate that deterioration of these emissions would be significantly different – higher or lower – than those of similar conventional emissions. EPA recognizes that manufacturers may not be able to develop DFs for N_2O and CH_4 for all their vehicles in the 2012 model year, and thus EPA is allowing the use of alternative values through the 2014 model year. For N_2O the alternative value is the DF developed for NO_X emissions, and for CH_4 the alternative value is the DF developed for NMOG emissions.

Auto industry commenters also expressed concerns that requiring measurement of N_2O using newer, more general test procedures developed to apply to all types of vehicles and engines would inherently require a wholesale shifting by manufacturers away from traditional light-duty test procedures. We believe that the requirements we proposed and are now finalizing do not have this effect, and that the manufacturers' concerns are unfounded. The regulatory language being finalized is very specific, referring to 40 CFR Part 1065 in a targeted way to only make reference to those requirements necessary for measurement of N2O. The regulations state very clearly and unambiguously that it is N2O measurement devices alone -- not laboratory hardware, software, calculations, or procedures -- that must meet Part 1065 specifications. That is, a manufacturer can continue to use current light-duty test procedures for all other purposes while using the N_2O analyzer specifications in Part 1065 for N_2O testing.

A commenter from the natural gas vehicle industry suggests that EPA include upstream fuel GHG emissions in its compliance approach. We agree that the production and distribution of natural gas can produce lower emissions of GHGs than comparable upstream emissions from the petroleum fuels. However, EPA as discussed in detail in Section III.C.3 of the preamble, EPA has concluded that for this rule, we will only consider upstream emissions for electric vehicles, given that electricity upstream GHG emissions are about three times higher than gasoline upstream GHG emissions. By comparison, the difference in upstream GHG emissions for both diesel fuel from oil and CNG from natural gas are relatively small compared to differences associated with electricity. EPA will continue to assess the issue of upstream emissions in future rulemakings.

5.6. EPA Small Entity Exemption

Organization: Association of International Automobile Manufacturers (AIAM)
Vehicles Services Consulting, Inc
KTM-Sportmotorcycle AG
Clean Energy Fuels
European Small Volume Car Manufacturers' Alliance (ESCA)
Artega Automobil GmbH & Co. KG

Wiesmann GmbH

Comment:

Association of International Automobile Manufacturers (AIAM)

The regulatory language proposed in section 86,1801-12(j) is as follows:
Businesses meeting the Small Business Administration size standard defining a small business as described in 13CFR 121.201 are eligible for exemption from the greenhouse gas emission standards specified in § 86.1818–12and associated provisions.
So, in order to qualify for the small business exemption, the manufacturer must meet the SBA "size standard." The "size standards" in 13 CFR 121.201 are specified only in terms of a number of employees, 1000 in the case of vehicle manufacturers. The EPA regulation does not state that the manufacturer must meet the definition of "small business concern" (which excludes foreign entities) under the Small Business Act in order to be exempted. There is no justifiable reason to limit the small business exemption to U.S. based companies, and doing so would present serious concerns under international trade agreements. If EPA decides to maintain this small business exemption in the final rule, it should clarify that the exemption is available to small entities regardless of location. This issue could be avoided entirely if EPA adopts our recommendation to use the small volume certification criterion of 15,000 units U.S. sales annually to exclude small manufacturers for the 2012-16 period.

Vehicle Services Consulting, Inc.

EPA proposed a provision allowing a GHG exemption BUT ONLY FOR CERTAIN small businesses – those that meet the Small Business Administration (SBA) criteria contained in 13 CFR 121.201.6 With this limitation, however, the proposed exemption appears to apply only to USA companies. The "US only" limitation may be in violation of WTO requirements. In addition, the "small entity" provision is limited to auto manufacturers with fewer than 1000 employees – a criterion that is irrelevant to a manufacturer's ability to comply with emissions standards (whereas the factor historically determining SVM status – vehicle sales – does affect ability. [OAR-2009-0472-7083.1, pp.3-4]

KTM-Sportsmotorcycle AG

The small entity conditional exemption appears to be only available to US based firms [OAR-2009-0472-7183, p.1]

There are several ways forward that we would support, such as extending the small entity conditional exemption to all small volume manufacturers. [OAR-2009-0472-7183, p.1]

Clean Energy Fuels

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 140.]]

In terms of the Proposal to Defer Standards For Manufacturer's Meeting SBA's Definition of Small Businesses:

Clean Energy believes this deferral is appropriate, and we look forward to working closely with EPA and NHTSA in the coming years to design appropriate GHG standards for small volume manufacturers as part of a future regulatory action.

European Small Volume Car Manufacturers' Alliance (ESCA)

There is a provision in the regulation for the 'small entity conditional exemption'. However, the definition applied to small volume manufacturers in this instance is the Small Business Administration criteria (<1,000 employees), which only allows for US producers to apply for the SECE. If the SECE was extended beyond SVMs based in the US, then this would allow several EU SVMs to participate. [OAR-2009-0472-7287.1, p.4]

ESCA would also support the definition of small entities being based on less than 15,000 sales in the US per annum, rather than the SBA definition. Several ESCA members have submitted detailed proposals. We hope that EPA/NHTSA is able to consider these proposals and work with the European industry to achieve a workable solution for both the regulator and the businesses. [OAR-2009-0472-7287.1, p.4]

Artega Automobil GmbH & Co. KG

The small entity conditional exemption appears to be only available to US based firms. [OAR-2009-0472-7481.1, p.1]

Wiesmann GmbH

The small entity conditional exemption appears to be only available to US based firms [OAR-2009-0472-7198, p.1]

There are several ways forward that we would support, such as extending the small entity conditional exemption to all small volume manufacturers. [OAR-2009-0472-7198, p.1]

Society of Motor Manufacturers and Traders Limited

There is a provision in the regulation for the 'small entity conditional exemption'. However, the definition applied to small volume manufacturers in this instance is the Small Business Administration criteria (<1,000 employees), which only allows for US producers to apply for the SECE. If the SECE was extended beyond SVMs based in the US, then this would allow several UK (and EU) SVMs to participate. [OAR-2009-0472-7229.1, p.4]

SMMT would also support the definition of small entities being based on <15,000 sales in the US per annum, rather than the SBA definition. [OAR-2009-0472-7229.1, p.4]

EPA Response:

EPA is clarifying that foreign as well as U.S. manufacturers meeting the SBA size criteria are eligible for the exemption. EPA in fact intended this result at proposal, although the commenters properly pointed out that this intent was not clearly expressed. EPA is retaining the SBA size criteria to define small entities and believes that it is important to do so to ensure that all small entities are exempt regardless of sales volume. EPA also proposed that otherwise-exempt small entities submit a one-time notification to EPA. For the reasons stated in Section III.B.8 of the preamble to the final rule, EPA has determined that such a condition is unnecessary. Consequently, small entities (as defined using SBA size criteria) are exempt from all requirements of the final rule.

In addition, EPA is also deferring standards for small volume manufacturers until a future rulemaking. Comments regarding small volume manufacturers and how EPA is implementing the small volume manufacturer deferment, including determining small volume manufacturer eligibility, are discussed in Section 5.4.2.

5.7 EPA Additional Credit Opportunities for CO_2 Fleet Averaging Program

5.7.1. Air Conditioning Related Credits

Organization: Chrysler Group, LLC (Chrysler)
Alliance of Automobile Manufacturers (Alliance)
Volkswagen Group of America (Volkswagen)
Toyota Motor North America
BMW of North America, LLC (BMW)
Honeywell International, Inc.
Nissan North America,
SABIC Innovative Plastic
Pittsburg Glass Works
California Air Resources Board
State of New Jersey
National Renewable Energy Laboratory
University of California – Santa Barbara
Guardian Industries Corp.
Environment Michigan
Schade, Michael T.

Comment:

Chrysler Group, LLC

Adjustment of NHTSA Standards for EPA Air Conditioning Credits

Harmonization between the NHTSA and EPA programs is a key component to successful implementation of a single National Program. Both agencies realized the importance of harmonization in the Notice of Intent, in which harmonization is mentioned nine times. That Notice describes the harmonization of the EPA and NHTSA programs as follows:

'EPA and NHTSA intend to propose two separate sets of standards, each under their respective statutory authorities. EPA expects to propose a national CO2 vehicle emissions standard .... NHTSA expects to propose appropriate related CAFE standards.' [NHTSA-2009-0059-0124, p.11]

We believe that there is a significant discrepancy between the NHTSA and EPA standards when addressing air conditioning credits. In EPA's portion of the NPRM, investments made in A/C system improvements to lower greenhouse gas emissions are explicitly recognized with greenhouse gas credits. A/C credits are not explicitly available in the NHTSA CAFE rule; credits are assumed in the development of the NHTSA attribute-based standards in order to ensure the 'appropriately related' threshold is met. However, the standards remain inconsistent. [NHTSA-2009-0059-0124, p.11]

We believe not all factors were adequately taken into account (e.g. phase-in of alternative refrigerants) to arrive at the industry average AIC credit approximation. [NHTSA-2009-0059-0124, p.11]

The issue here has to do with harmonizing the two rules - a key objective of a successful National Program. Manufacturers still have to meet the overall stringency of the joint program. [NHTSA-2009-0059-0124, p.12]

Recommendation:

Chrysler recommends that NHTSA recognize each manufacturer's air conditioning improvement plan for 2012-16 model years. [NHTSA-2009-0059-0124, p.14] [[See NHTSA-2009-0059-0124, pp.11-15 for more discussion on this issue]]

Provision of Fuel Economy Air Conditioning Credits

Chrysler believes that the EPA Administrator has authority to define and calculate a manufacturer's average fuel economy. See 49 U.S.C. § 32904(c) ('the Administrator shall measure fuel economy for each model and calculate average fuel economy for a manufacturer under testing and calculation procedures prescribed by the Administrator.'). EPCA provides the EPA Administrator with broad discretion to determine how to calculate a manufacturer's average fuel economy. [NHTSA-2009-0059-0124, p.16]

The Administrator therefore may exercise her discretion to calculate fuel economy in a manner that recognizes the GHG reduction from improved air conditioning systems. She can do this by adding the value of the A/C credits to each model's fuel economy when calculating a manufacturer's corporate average fuel economy. [NHTSA-2009-0059-0124, p.16]

In effect, the NPRM already accomplishes part of this task by setting forth industry average A/C credits and requiring that they be taken into account when GHG values are translated to fuel economy values. Unfortunately, the NPRM' s use of average A/C credits for this translation, rather than the earned A/C credits, creates a discrepancy between the GHG values and A/C credits that is contrary to the regulatory compatibility goal of the National Program. In addition,

it discourages manufacturers from applying technology that will exceed the industry average, as the benefits from that added technology will not be recognized in the CAFE program. [NHTSA-2009-0059-0124, p.16]

It is important to note that the process through which the agencies can apply A/C credits in the CAFE program involves only the calculation of a manufacturer's average fleet fuel economy. It does not involve in any way the process through which each vehicle model is to be tested and its fuel economy measured. [NHTSA-2009-0059-0124, p.16]

Alliance of Automobile Manufacturers (Alliance)

The Alliance supports the inclusion of credits for mobile air conditioner (MAC) improvements in EPA's GHG regulation. If structured appropriately, these MAC provisions can provide significant near-term GHG benefits at comparatively low cost. The inclusion of MAC credit provisions was a critical element that enabled the industry to reach agreement in May 2009 with the Administration on a regulatory path forward to reduce vehicle GHG emissions. [OAR-2009-0472-6952.1, p.8]

Volkswagen Group of America (Volkswagen)

Volkswagen supports the comprehensive comments the Alliance has issued in the topic of air conditioning credit. [OAR-2009-0472-7210.1, p.4]

Toyota Motor North America

`To comply with the CO2 fleet-wide average standards, EPA proposes that manufacturers be able to generate and use credits for improved air conditioner (A/C) systems. EPA has structured the A/C provisions to account for A/C direct emissions (leakage reductions) and A/C indirect emissions (efficiency improvements). Additionally, the proposed leakage reduction credit would take into account the reduced GHG impact from the use of an alternative refrigerant. [OAR-2009-0472-7291, p.20]

In general, Toyota supports the inclusion of credits for MAC (mobile source air conditioner) improvements in EPA's GHG regulation. The comments provided are aimed at ensuring that MAC credit provisions remain effective in delivering the appropriate GHG reduction credits and for providing some incentive for introducing future MAC technology improvements. [OAR-2009-0472-7291, p.20]

BMW of North America, LLC (BMW)

BMW supports credits for improved air conditioning systems as an effective method for reducing GHG emissions and improving fuel economy provided vehicle test procedures remain unchanged. [OAR-2009-0472-7145.1, p.7]

The proposal on mobile air conditioning neglects measures which reduce the transmission of solar energy into a vehicle's interior and the demand for cooling. Therefore, as a technology to

reduce GHG emissions, improved glazing and shading should also be taken into account and receive appropriate credit. More specifically, we suggest revising the proposed regulatory language at §86.1866-12 (c) *Credits for improving air conditioning system efficiency* to state that air conditioning efficiency credits will also be made available for other technologies, upon approval by the EPA Administrator, if the manufacturer demonstrates that such technologies allow the air conditioning system to achieve C02-equivalent grams per mile emissions reductions comparable to those associated with the technologies identified in §86.1866-12 (c)(l) (i)-(vi). [OAR-2009-0472-11294.1, pp. 1-2]

Honeywell International, Inc.

Honeywell supports the establishment of credit opportunities for improved air conditioner (A/C) systems and leakage control technologies to be used in compliance with the fleet wide CO2 emissions average standards. [OAR-2009-0472-7206.1, p.3]

Nissan North America

Similarly, Nissan has invested and will continue to invest in advancements to reduce CO2 emissions associated with air conditioning. The early air conditioning credits as well as the ongoing air conditioning credits, serve to promote ongoing advances to a vehicle system with the potential to significantly reduce CO2 emissions regardless of vehicle miles traveled. This is particularly true because the structure of the proposed air conditioning credit programs predicates credits upon exceeding a baseline average for the industry. Only those manufacturers who exceed the industry average can earn credits. [OAR-2009-0472-6798.1, p.6]

SABIC Innovative Plastic

The Air Conditioning Credit Should Not Discourage or preclude Polycarbonate Glazing.

Because polycarbonate is significantly less dense and weighs substantially less than traditional glass, it offers substantial greenhouse gas reduction opportunities when used in glazing. The potential for polycarbonate to be incorporated in to areas of fixed glazing-roof panels, rear quarter panels and backlites - during the model years covered by this rulemaking is strong unless EPA discourages the development by incorporating to the list of air conditioning technologies one which is focused on reducing solar generation to the cabin through the use of solar reflective and absorbing technologies designed specifically for glass. Including these technologies would have the unintended effect of discouraging adoption of lightweight polycarbonate glazing.

The EPA greenhouse gas program should not incorporate into its credit system technologies that would have the result of discouraging the greenhouse gas emissions achievable through lighter weight polycarbonate glazing. [OAR-2009-0472-7080.1, p.4]

Pittsburg Glass Works

It has been estimated by the EPA and Department of Energy's National Renewable Energy Laboratory (NREL) that about 7 billion gallons of fuel are used annually for air conditioning in

light duty vehicles. Of this 7 billion gallons, almost 2.5 billion gallons of fuel could be saved with technologies that reduce AC power by 30%. Fortunately, several technologies are commercially available that can accomplish this objective. A national fuel savings of 2.5 billion gallons annually, and GHG emissions reduction of 22 billion Kg annually could be accomplished with the heat load reduction technology. The current proposal by EPA would not credit these technologies because the test procedures do not allow for the evaluation of these technologies.

A recent study conducted by NREL under the auspices of the Society of Automotive Engineers and sponsored by the EPA demonstrated that heat load reduction of 30% is possible with commercially available technologies. The heat load reduction technologies resulted in 12 deg C reduction in breath air temperature when compared to a base line vehicle. This temperature reduction was then shown to reduce the Air Conditioning load by 30%. Based on 11,998 annual vehicle miles traveled, and average Air Conditioning use of 32.6%, NREL calculated that the average fuel consumption could be decreased by 11.2 gallons on an annual basis. When multiplied by the total number of vehicles on the road, these fuel savings would amount to over 2.5 billion gallons on an annual basis.

The current and proposed test procedures call for a 10 minute heat soak before the SCO3 test cycles begins. This test soak is performed at 85 deg F. Firstly, these conditions do not reflect real world conditions where vehicles are parked in the sun for long durations. It is our recommendation that the soak time be extended to thirty (30) minutes to allow for a more real world heat soak.

The value of heat load reduction technology has an even greater fuel economy and CO2 impact on vehicles using hybrid and electric technologies. Recent testing with NREL (www.osti.gov/servlets/purl/957994-YmvAS2/) has shown that using Infra-Red Reflective Glazing on the windshield and rear window in a Plug-in Hybrid Vehicle will increase the adjusted, utility factor-weighted fuel economy from 36.8 to 42.9 miles per gallon during the UDDS cycle. Since the use of Plug-in Hybrid vehicles is projected to increase in the coming years, the reduction of CO2 emissions from these vehicles will be too large to ignore.

Infra-Red Reflective glazing has been commercially used in the United States since 1990. The technology has been proven to lower the interior cabin temperature and reduce the air conditioning fuel usage. Recent regulations issued by the California Air Resources Board (http://www.arb.ca.gov/cc/cool-cars/cool-cars.htm) require the use of heat load reducing glass, starting with the 2012 Model Year vehicles sold in California. The performance requirement is strengthened to all-around glazing starting with the 2016 Model Year. CARB has calculated the fuel savings and CO2 benefits of the glazing technology and determined that it has a net cost savings for the consumer. If the EPA/NHTSA recognize the national impact of these technologies, the cost effectiveness of the glazing technology will improve even further. Since the technology is already going to be commercially available and used by the auto manufacturers, it is only natural for the EPA/NHTSA to recognize the contribution this technology makes to the CO2 reduction on a national basis.

Fuel consumption and CO2 emissions can be reduced with heat load reduction technologies that are currently not credited by the EPA/NHTSA. Sufficient scientific data exists to corroborate the

value of the these technologies in the real world. Savings of over 2.5 billion gallons of fuel and reduction of CO2 emissions over 22 billion Kg annually are going to be wasted if these technologies are not included amongst the technologies by the EPA/NHTSA. Economic analysis by CARB has shown that the Infra-Red Reflective glazing will actually save the consumer money while reducing the CO2 emissions. This is an overwhelming argument for the EPA/NHTSA to consider in its evaluation of technologies to reduce fuel consumption and reduce CO2 emissions.

We would be glad to provide any further information that the EPA/NHTSA may need for its analysis. [OAR-2009-0472-7244.1, pp.1-3]

California Air Resources Board

CARB staff conducted a comparison of the AC credit approach in this proposed rulemaking against California's Pavley I program in effect and the more recent Environmental Performance Label regulation. The analysis addresses a need to understand how the various AC credit schemes compare and the reason for differences in the credit amounts. CARB's analysis was provided to EPA for reference. Overall expected AC emissions credits and associated GHG reductions appear similar. While CARB is not suggesting changes to the Final Rule, we recommend that CARB and EPA continue dialogue on this issue to reconcile the California and federal approaches so that one uniform approach could apply for the 2017 and later model years. [OAR-2009-0472-7189.1, p.13]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

State of New Jersey

It is clear based on numerous studies that air conditioners while in use reduce motor vehicle miles per gallon in the range of 20 percent or more, and that because they are used on the average on a national basis about 25 percent of the time, air conditioners decrease overall fleet mileage by 5 percent or more. To encourage automobile manufacturers to produce more efficient air conditioning systems, the Department supports the USEPA's proposal to amend the current CAFE fuel economy test procedures for light-trucks to provide for air conditioner operation during testing and to take other steps for improving the accuracy and representative of fuel economy measurements. These steps should be taken as soon as practical and the Department agrees that having the implementation of these amendments begin in model year 2017 seems reasonable. The Department also supports the more immediate interim alternative step of providing CAFE program credits under the authority of 49 U.S.C. 32904(c) for light trucks equipped with relatively efficient air conditioners for model years 2012-2016. The Department agrees that if such credits were adopted, it would be necessary to reflect them in the setting of the CAFE standards for light trucks for the same model years. Since this available data on the impacts of air conditioning demonstrates that the fleetwide average fuel economy obtained from the implementation of this joint rulemaking in actuality will be at least 5 percent less than the commitment of 35 mpg, it is critical that air conditioning operation and use be considered in all future standard settings. [OAR-2009-0472-7109.1, p.7]

National Renewable Energy Laboratory

In Table III.C.1.1, there are no credits available for passenger compartment thermal load reduction technologies. Reducing the thermal load reduces the A/C fuel use during passenger compartment cool down and steady state. It is recommended to provide credits for thermal load reduction technologies that would encourage use of these technologies and result in further reductions in GHG emissions. [OAR-2009-0472-4798.1, p.1]

University of California – Santa Barbara, Bren Working Group on Vehicle Fuel Economy

Mobile Air Conditioning (MAC). Given the potency of CH4, N2O, and other non-CO2 gases in contributing to climate change, we also recommend that efficient air conditioning units be treated as a fuel saving technology. Thus we encourage the EPA to include incentives, such as a credit system, for reducing N2O and CH4 emissions below the proposed cap as a means to motivate innovation in clean technologies. [OAR-2009-0472-7188.1, p. 8]

One pound of HFC-134a (a common GHG used in MAC) released to the atmosphere has the same global warming potential as 1,300 pounds of CO2. In the United States alone, MAC use consumes over 7 billion gallons of gasoline every year, emitting over 58 million metric tons of carbon dioxide. Refrigerant leakage adds the equivalent of over 50 million metric tons of CO2 to the atmosphere. The National Oceanic and Atmospheric Administration (NOAA) reports that 20% of the HFC-134a present in equipment is emitted to the atmosphere each year. In 2004, MAC use emissions accounted for 52% of total U.S. HFC-134a emissions: 24,539 metric tons, equivalent to 35,090,770 metric tons of CO2. Though this represents only 0.1 percent of global greenhouse gas emissions from all human activities, reducing these higher forcing substances can yield extra positive effects by increasing fuel efficiency. [OAR-2009-0472-7188.1, p. 8]

Industry experts have recognized the ability to cut emissions and produced a list of recommended actions for doing so in a 2007 report to the EPA. Because of the amplified effects of refrigerants on climate change, the EPA should take special care to regulate and encourage the reduction of leakage. [OAR-2009-0472-7188.1, p. 8]

In addition to refrigerant leakage, MAC use reduces efficiency of gas consumption. Well engineered MAC systems account for about 5% of a car's real fuel consumption, while poorly engineered and low cost systems can use 20% or more. A European study showed that by changing the technology of MAC in a car, fuel efficiency was improved by 0.3 liters/100km and CO2 tailpipe emissions were reduced by 7 grams/km.23 The total CO2 equivalent reduction for such a technology change was 12g/km. By reducing the use of these higher forcing substances, extra positive effects can also result from increasing fuel efficiency. [OAR-2009-0472-7188.1, pp. 8-9]

Changes in MAC efficiencies can reduce CO2 emissions not only directly, but also indirectly via better fuel consumption. Furthermore, more efficient systems can keep refrigerants with more forcing power than CO2 captured within the system. We believe this multiple impact merits attention from the EPA. [OAR-2009-0472-7188.1, p. 9]

Guardian Industries Corp.

Guardian is committed to the improvement of fuel economy through technology advances. We note, however, that proposals to improve the efficiency of air conditioning systems miss the clear benefit provided by reducing the actual heat load on vehicle cabins. Focusing on actual load reduction through technologies that can keep the heat out can actually have greater total benefit than improving the efficiency of mechanical cooling systems. [OAR-2009-0472-7124.1, p.2]

The California Air Resources Board (CARB) has recognized this fact. On June 25, 2009, CARB adopted a regulation requiring reduced solar transmission of the glazed openings in vehicles in California starting with model year 2012. CARB based its benefit calculations on testing published by NRELIEP A demonstrating that vehicle soak temperatures can be significantly reduced using solar reflective glazing. The estimated cool-down load reduction results in a 26% drop in A/C fuel consumption. CARB estimated that the rule as adopted in California will reduce CO2 emissions by approximately 0.861 MMT per year and if carried nationwide could generate a saving of 8.30 MMT per year. This estimated benefit is based only on soak temperature reduction and ignores the additional dynamic benefit of heat load reduction while operating the vehicle. Glazing heat load reduction technology will pay for itself over time at the consumer level through reduced fuel consumption while providing a more comfortable environment for vehicle occupants. The CARB estimated that the fuel savings generated would pay back the option cost to the consumer in approximately 7 years after which savings would continue to accrue for the life of the vehicle. [OAR-2009-0472-7124.1, p.2]

Guardian recommends that any Federal emissions standard allow credit for heat load reduction through reduced solar transmission through the glazing openings of the vehicle. Allocating appropriate emissions credits to heat load reduction technologies will add a proven effective method for OEM's to meet the ultimate requirements for efficiency. [OAR-2009-0472-7124.1, p.2]

Environment Michigan

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 68.]]

Credits for air conditioning have already allowed the Department of Transportation to set a fuel economy standard of 34.1 mpg, lower than the President's goal of 35.5 miles per gallon. The administration should not further weaken the program by allowing automakers to rack up unnecessary credits and comply with the standards without building more efficient vehicles.

Schade, Michael T.

A/C on or off? I would doubt that many people could explain how A/C operation is addressed in calculating the window sticker numbers that they use to help decide upon a vehicle purchase. Almost every vehicle now has A/C and the manufacturers just don't have much of an incentive to design and supply more efficient A/C systems. Is that because they know that there has been no direct CAFÉ benefit because the A/C systems are mandated to be off during fuel economy

testing? On a personal basis, my family drives Ford Focuses and my observed fuel economy penalty is 10% on the highway and 15 to 20% in the city based upon repeated observations with each vehicle. And the damper ventilation system always heats the ambient air 12 degrees before entering the passenger space so I need to use A/C most of the year. My family has had three Focuses and they are all the same. Yes, a poor design, but is it atypical? Probably not. Again, a legislative fix to include realistic levels of A/C operation is probably required. But let's do it now in a clear and unambiguous manner with a simple and straightforward description of how A/C plays into the fuel economy. [OAR-2009-0472-7261.1, p.2]

EPA Response:

Window Glazing

The commenters are correct that the rules do not provide air conditioner credits for the use of window glazing technologies, or technologies which reduce solar load. However, the EPA does provide for other flexibilities where technologies such as solar load-reducing window glazing may be eligible for "off-cycle" (rather than A/C) credits under the final rule. That is, they may qualify if EPA believes these technologies are "innovative and novel" and produce CO2e reductions which are not significantly measureable on the FTP. See section 86.1865-12 (d) (1) (i) and (ii). Manufacturers would have to meet the other requirements of that regulation, including obtaining EPA approval, before claiming such credits.

Support for Credits

Many commenters noted that the credits are necessary in allowing them to transition to the new GHG emissions standards. Many commenters also expressed support for the A/C crediting program. EPA is grateful for the positive support for this aspect of the program

Consideration of A/C Credits Under CAFE

Several commenters urged EPA to take steps to take A/C improvements into account under the CAFE program. Chrysler argued that EPA can do so as part of the calculation process mandated under 49 U.S.C. § 32904(c). Under that subsection, EPA measures fuel economy for purposes of assessing manufacturers' compliance with CAFE standards and then calculates average fuel economy. Chrysler argued that EPA has broad discretion under EPCA (32904(a)(1)) to determine how to calculate average fuel economy. The State of New Jersey urged EPA to amend its test procedures to account for use of improved A/C systems by light trucks. In response, by statute, fuel economy for passenger cars must be measured using the Federal Test Procedure, which does not account for air conditioning since it is not turned on during the test procedure. See 49 USC section 32904 (c) and 74 FR at 49458 and 49465. This raises the issue of whether EPA has the discretion to calculate fuel economy for passenger vehicles in a manner that involves adding A/C improvement credits to the measured fuel economy of a vehicle. EPA need not reach that question as such a step would require amending its calculation procedure regulation. Doing so is effectively beyond the scope of this proceeding due to time limitations. There is no statutory bar to EPA's amending the test procedure in measuring light truck fuel economy, but is not doing so in this proceeding. In addition to this effectively being beyond the

scope of this proceeding due to time limitations, such a difference in test procedures would necessitate a reanalysis of the maximum feasible average fuel economy level for light trucks for each model year under EPCA.

5.7.1.1. A/C Leakage Credits

Organization: Ford Motor Company
Jaguar Land Rover
Toyota North America
European Automobile Manufacturers Association
Association of International Automobile Manufacturers (AIAM)
Chrysler Group, LLC (Chrysler)
Alliance of Automobile Manufacturers (Alliance)
Volvo Car Corp.
Hyundai Motor Company
Union of Concerned Scientists
Honeywell International, Inc.
New York State Department of Environmental Conservation

Comment:

Ford Motor Company

With regard to determining direct air conditioning emissions credits for low leak systems, Ford supports EPA's use of the latest version of the Society of Automotive Engineers (SAE) International Surface Vehicle Standard, J2727, to estimate annual refrigerant leakage from motor vehicles air conditioning systems. SAE J2727 includes conservative allowances for part variability and assembly robustness and is more representative and more conservative than bench tests and is correlated to real-world leakage. Ford believes these reliability improvements carryover the life of the vehicle resulting in reduced service and fewer re-charges. Ford strongly supports the use of SAE J2727 to quantify mobile air conditioning refrigerant reductions as it provides a common approach for all manufactures to evaluate their A/C systems direct emissions. [OAR-2009-0472-7082.1, p. 5]

Jaguar Land Rover

Jaguar Land Rover supports the principle of using leakage data generated by SAE J2727 to estimate refrigerant leakage from mobile air conditioning systems. Since the leakage formula published in the August 2008 version of SAE J2727 differs slightly from that published in the July 2007 version of SAE J2727, Jaguar Land Rover wishes to state that it regards the August 2008 formula as being the correct version to use. [OAR-2009-0472-7213, p.1]

Toyota Motor North America

EPA's A/C leakage credits assign larger credits to system designs that are expected to result in greater leakage reduction and are proportionally larger for lower GWP refrigerants over the

current R134a. The proposed method for calculating these credits is to choose from a menu of equipment and components and establish a leakage score. Credits would be generated from leakage reduction improvements that exceed average fleet-wide leakage rates. [OAR-2009-0472-7291, p.20]

EPA's NPRM A/C leakage credit proposal is based closely on that being developed through IMAC and the SAE Surface Vehicle Standard J2727, August 2008 version. In the NPRM, EPA references the J2727 leakage scoring system as generally representing a reasonable correlation with real world leakage in vehicles. Similarly, EPA's proposed credit approach would associate each component with a specific leakage rate in grams per year, which is identical to the values in J2727. The proposed A/C leakage credit provision also provides larger credits as the GWP (Global Warming Potential) value approaches zero. Hypothetically, a refrigerant with a GWP of 1 would attain maximum credits because the GHG concern from leakage would be eliminated. [OAR-2009-0472-7291, p.20]

Toyota supports EPA's proposal for calculating the amount of credit based on J2727 scores. However, Toyota believes that EPA should directly reference and incorporate the J2727 methodology since requirements to calculate these J2727 scores are currently in place in Minnesota and in California for ARB's Environmental Performance Label. In doing so, EPA's regulation would harmonize with the other regulations and provide consistency for manufacturers to provide the same J2727 reporting data. [OAR-2009-0472-7291, p.20]

European Automobile Manufacturers Association

Credits for leakage reduction

Calculation of leakage rate of refrigerant should be defined by reference to SAE J2727 and not by separate definition. Reason: any technical improvement of the SAE J2727 would imply a revision of the law. [OAR-2009-0472-7444.1, p.1]

Association of International Automobile Manufacturers (AIAM)

AIAM supports EPA's proposal to rely on a menu-based approach to assess air conditioning refrigerant leakage, as set forth in proposed section 86.166-12. The leakage rate of refrigerants is very low, and direct measurement of leakage would require expensive new test facilities and the development of new test procedures, as EPA notes. See preamble at 49527. Moreover, given anticipated movement toward lower global warming potential (GWP) refrigerants, leakage impacts on climate change will likely be substantially reduced. However, EPA should allow the flexibility for manufacturers to provide data to substantiate the achievement of lower leakage rates than predicted by the EPA menu that is based on SAE Standard J2727. [OAR-2009-0472-7123.1, p.11]

EPA proposes to use a slightly modified version of the SAE J2727 protocol for the menu-based leakage assessment. Instead, EPA should rely on the J2727 protocol as adopted by SAE. The SAE Interior Climate Control Committee reviews the standard regularly and updates it as

needed. EPA will obtain the best engineering estimates for leakage by using the most current version of J2727 without modification. [OAR-2009-0472-7123.1, p.12]

AIAM supports the Agency's proposed approach for credits for alternative refrigerants with low Global Warming Potential. We believe it is appropriate to base these credits on the relative GWP values of the current versus alternative refrigerants. In addition, we support EPA's proposal for additional credit for the end-of-life benefits associated with alternative refrigerants. [OAR-2009-0472-7123.1, p.13]

Since the legacy fleet of vehicles, which uses the current refrigerant with a higher GWP, will be in use for many vehicles into the future, AIAM encourages EPA to work with the SAE committee, auto manufacturers, and the auto service industry to enhance air conditioning maintenance and refrigerant recovery/recycling. [OAR-2009-0472-7123.1, p.13]

Chrysler Group, LLC (Chrysler)

Leakage Credit and SAE J2727 Methodology

The EPA direct credit methodology assumes zero credit for vehicles above a set leakage threshold (20.7 gm/year for trucks and 16.6 gm/year for cars) and clips the credit amount for vehicles below a leakage threshold (8.3 g/year for cars and 10.4 gm/year for trucks). The Minnesota Pollution Control Agency 2009 MY leakage reporting database illustrates that EPA is not counting approximately 22% (58 plus 22 out of 363 vehicles) of the vehicle population by setting these thresholds. The lower and upper limits are disincentives to air conditioning system leakage improvements. [NHTSA-2009-0059-0124, p.17]

Recommendation:

The practice of excluding vehicles does not follow the attribute-based approach used for other facets of this rule. EPA should base credits on a continuous curve and recognize the entire range of potential leakage rates. [NHTSA-2009-0059-0124, p.17]

Effects of System Aging to Leakage

Chrysler believes there would be no benefit in modifying SAE J2727 to account for system aging effects. There is very limited data to support modifications of this type. A properly designed research program to define such modifications would take considerable time. [NHTSA-2009-0059-0124, p.17]

Recommendation:

Based on industry and government anticipation of the quick adoption of a low global warming potential ('GWP') refrigerant, the development of such modifications are not required. The NPRM provides incentive to reduce leakage in the short term while final preparation is done to introduce low GWP refrigerants. [NHTSA-2009-0059-0124, p.18]

Alliance of Automobile Manufacturers (Alliance)

The Alliance supports EPA's proposal to utilize the unmodified SAE J2727 standard for estimating refrigerant leakage as a basis for awarding credits for MAC refrigerant leakage reductions. The SAE J2727 standard is a design-based calculation that was developed based on its correlation with vehicle fleet tests and bench test data in a mini-shed. The results have been correlated well to mini-shed tests and vehicle fleet tests conducted in Europe and Japan. The SAE Improved Mobile Air Conditioning ("IMAC") program also showed good correlation between SAE J2727 and SAE J2763 mini-shed tests. We agree with EPA's conclusion that an actual vehicle or bench test program for leakage mandated by this regulation would be exceedingly difficult to conduct, and would provide little useful additional information. Furthermore, the SAE calculation includes conservative adjustments for assumed error rates in assembly, whereas any test program would use correctly assembled systems. Thus, SAE J2727 provides an accurate -- or even somewhat conservative -- estimate of MAC leakage rates for new vehicles. We also agree with EPA's determination that MAC service and repair needs will be reduced as leakage rates fall, and that service-related emissions should be expected to fall proportionally. [OAR-2009-0472-6952.1, p.9]

In addition, requirements to calculate J2727 scores are currently in place in Minnesota and in California for ARB's Environmental Performance Label. Automobile manufacturers have systems in place to gather this data, and the Alliance would encourage EPA to remain harmonized with these other regulations through the use of unmodified J2727 data. [OAR-2009-0472-6952.1, p.9]

The Alliance also supports EPA's proposal for calculating the amount of credit to award based on the J2727 scores. This formula awards credits for improvements down to the level of a J2727 score of approximately 8 grams per year of refrigerant leakage. The industry-wide database compiled by the state of Minnesota for 2009 models shows that almost no vehicles currently achieve such a low score. Thus, an appropriate incentive would be created for essentially all vehicles to make improvements in system integrity, and we would expect prompt and broadbased action by the industry to implement vehicle improvements under this framework, resulting in significant cost-effective GHG reductions. [OAR-2009-0472-6952.1, p.9]

EPA is incorrect, however, in assuming that electric compressors will not achieve significant penetration levels within the time frame of this regulation. In fact, electric compressor penetrations could become high enough to be meaningful, and this technology should be encouraged. The Alliance therefore recommends that EPA add a provision allowing a higher level of MAC direct credit for systems that use an electric compressor. [OAR-2009-0472-6952.1, p.9]

There would be little value in modifying the J2727 standard for these credit provisions, such as by attempting to account for system aging effects that would occur later in the vehicle's life. There is no data on which to base any factors to adjust SAE J2727 calculations for in-use deterioration over time. A new research program to gather this data would be needed, and this would take time to conduct. Given the favorable outlook for introducing a new, low-GWP refrigerant in the next few years, the development of a SAE J2727 aging factor need not be a

high priority. EPA makes a reasonable assumption that the improvements in new vehicles leak rates should result in proportional reductions throughout the life of the vehicle. The current EPA proposal provides a good, workable incentive structure that will significantly improve MAC leak rates in the near term; in the longer term, leak rates will not be an environmental issue, since low GWP refrigerants will predominate. [OAR-2009-0472-6952.1, pp.9-10]

Volvo Car Corp.

VCC is currently reporting annual MAC leakage to Minnesota and CARB (included in the MAC-credit package). Both Minnesota and CARB accepts alternative refrigerant leakage measurement methods. Volvo uses SAE J2763 (real measurement from mini-shed) and VCC would like to propose acceptance of SAE J2763 as an alternative to J2727 for leakage credit calculation. Please see Attachment 1.

Mobile Air Conditioning (MAC) Credits: EPA proposes to credit manufacturers for improved MAC efficiencies and the use of low global warming potential refrigerants. The inclusion of MAC credit provisions was a critical element that enabled the industry, the Administration, and California to reach agreement in May 2009 on a regulatory path forward to reducing vehicle GHG emissions. The Alliance supports the concept of MAC credits and has provided constructive suggestions for improving EPA's proposed approach, including the elimination of unnecessary idle air conditioning test procedures. To fulfill the objectives of this rule, EPA also needs to remove any obstacles (i.e., SNAP approval) to commercially available alternative refrigerants for the 2012 model year.

MAC efficiency-improving technologies and credits. VCC suggests an alternative to the technology list (Proposed Rule making, Table III C.1-1) proposed for MAC efficiency credits. Such alternatives would promote development of design improvements not included in the proposed list.

[[Comments on the proposed SAE standards]]

VCC continuously develops the climate system in order to reduce AC leakage and improve durability. As example VCC is mostly using steel as material in the AC pipes compared to most manufactures who are using aluminum which has a lower yield-point, limited resistance to external corrosion, wear and chafing.

VCC performs physical test mini-SHED according to test method prescribed as F-gas directive 706/2007/EC . Volvo is convinced that physical measurements reflect real vehicle emissions more accurately than calculations and estimations. The new proposed leakage measurement standard SAE J2763 (Test procedure for determining R134a leakage rates of Mobile Air conditioning systems in a Mini-shed) is equal to the 706/2007/EC directive.

VCC would like to point out several reasons why the actual measured leakage (according to SAE J2763) is lower than the calculated leakage (according to SAE J2727):

[extensive discussion and evidence on the above point continues from OAR-2009-0472-7168.1, pp.8-10]

Hyundai Motor Company

Hyundai supports EPA's proposal to base the A/C leakage credits on SAE J2727. As EPA notes, refrigerant leakage rates are too low to be measured with current test equipment and would require new test facilities and procedures in order to measure leakage rates (74 FR 49527). As a result, a design-based methodology is appropriate for determining A/C leakage credits. [OAR-2009-0472-7231.1, p.6]

Union of Concerned Scientists

UCS supports the availability of credits tied to A/C leakage and efficiency improvements. However, we believe it is critical that credit magnitudes accurately reflect real-world emissions reductions. We were surprised by the discrepancy between individual credits specified in the proposed rule, and those previously specified by the California Air Resources Board. We speculate this may be a result of differing baselines chosen by EPA and CARB, though other factors could be contributing to this as well. Since accurately reflecting emissions benefits offered by improved A/C systems is the ultimate goal, we suggest EPA have additional conversations with CARB to assess discrepancies before issuing its final rule. [OAR-2009-0472-7181.1, p.10]

Additionally, on the issue of system efficiency with the use of alternative refrigerants, EPA states, [OAR-2009-0472-7181.1, p.11]

It is possible that alternative refrigerants could, without compensating action by the manufacturer, reduce the efficiency of the A/C system (see discussion of the A/C Efficiency Credit below.) However, EPA believes that manufacturers will have substantial incentives to design their systems to maintain the efficiency of the A/C system, therefore EPA is not accounting for any potential efficiency degradation. [OAR-2009-0472-7181.1, p.11]

The agency does not elaborate on the "substantial incentives" manufacturers have for maintaining the efficiency of the A/C system. Given that the A/C system's efficiency (or lack thereof) will not appear on the 2-cycle test, it strikes us that manufacturers, rather, would not have the incentive to maintain the A/C efficiency system. We recommend the agency review this issue to account for efficiency degradation associated with certain alternative refrigerants. [OAR-2009-0472-7181.1, p.11]

Honeywell International, Inc.

Direct Emissions from A/C leakage and corresponding leakage credits should accurately reflect real-world scenarios and the best available science

Leakage rates should be determined from a regional-cross section of real world operating conditions and vehicle life

EPA Response to Comments

During Honeywell's initial reading of the Proposed Rule, it appeared that the EPA offered credits that were insufficient for real leakage rates in motor vehicles over time across the varying operating conditions. For example, the assumed emission (leakage), AvgImpact term, rates of 16.6 to 20.7 g/year for the average annual impact of A/C leakage from the use of HFC-I 34a refrigerant is only representative of refrigerant emission rates for new motor vehicle A/C systems. These rates do not reflect leakage from vehicles that are 'off-the-lot' or 'used', which have higher emission rates. Aged systems experience all of the following conditions that increase their emission rates: seasonal, daily and in operation thermal cycles; vibrations; hardening of hoses and 0- rings; drying out of the shaft seal due to non-operation (or continuous operation for clutchless models); collisions; service (engine or mobile A/C system); and corrosion leaks. [OAR-2009-0472-7206.1, p.4]

The Supplemental Draft Regulatory Impact Analysis Proposed Rulemaking to Establish Light Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, EPA-420-D-09-003, was subsequently released by EPA on September 28,2009 (the 'DRIA'). Upon our analysis of the DRIA, the contribution of the MaxCredit term to reflect those conditions impacting aged systems becomes clear. As a result, Honeywell agrees with EPA that the magnitude of the MaxCredit term is correct to use as a multiplier in the proposed credit equation. [OAR-2009-0472-7206.1, p.4]

Honeywell concurs with EPA's emissions equation to determine the net fleet effect of direct emissions due to refrigerant leakage. In summary, Honeywell agrees that the LeakScore may be used to estimate the leakage of new motor vehicle A/C systems, the MaxCredit term is the correct order of magnitude to account for fleet aging through the vehicle lifetime, and the GWP Refrigerant term accounts for the GWP impact of alternative refrigerants compared to the current RI34a refrigerant, GWP100 = 1430. [OAR-2009-0472-7206.1, p.4]

EPA should update its leakage emissions assumptions based upon the best available technical studies

Through our analysis of the crediting program, we identified two additional recent publications that we bring to EPA's attention. EPA may wish to consider adding these studies to its analysis as additional data sources for refrigerant leakage rates of new and used systems. Honeywell asserts that the addition of these studies will quantify more accurately the per-vehicle per-year average leakage rates and will update EPA's assumptions based upon the best-available science through the use of the MaxCredit and AvgImpact terms. [OAR-2009-0472-7206.1, pp.4-5]

a. Doctoral Thesis of David Souse, Mines ParisTech, Study of Refrigerant Emissions from Mobile Air-Conditioning Compressor Shaft Seals, Dec 2008. This study found that compressors leak at rates between 5 and 40 g/year (Figure 2-27). Aged compressors tested leak at rates of 97 to 1800 g/year when pressurized with refrigerant (Table 2-4).
b. Denis Clodic, Final Report on Establishing the Leakage Rates of Mobile Air Conditioners, 2004. This study found that the average leakage rate of MAC systems from 1 to 6 years old is 52.4 g/year ± 4.6 g/year. [OAR-2009-0472-7206.1, p.5]

The inclusion of these studies may impact EPA's assumptions regarding average leakage rates associated with mobile A/C systems and provide a stronger basis for understanding direct A/C emissions due to the leakage of the hydrofluorocarbon refrigerant in use today. [OAR-2009-0472-7206.1, p.5]

The SAE J 2727 Standard Mobile Air Conditioning System Refrigerant Emissions Chart is not an appropriate standard for measuring lifetime leakage

EPA proposes that § 86.166-12 of the Proposed Rule utilizes the SAE J2727 design-based procedure as the basis for generating Leakage Credits. We disagree with the use of this standard because it does not adequately reflect leakage over the lifecycle of a vehicle. In the DRIA, EPA states that the SAE Standard J2727 - HFC-134a Mobile Air Conditioning System Refrigerant Emissions Chart may be used to provide an estimate of the emission rates of new, properly constructed passenger vehicles. However, Honeywell argues that this standard is not appropriate for determining the leakage rate for vehicles as they progress through their lifetime. [OAR-2009-0472-7206.1, p.5]

We propose that companies wishing to submit for credits based on leak tightness of their systems also be allowed the opportunity to design a component life test based on SAE Standard 12763, Test Procedure for Determining Refrigerant Emissions from Mobile Air Conditioning Systems. The use of test protocols would give a true indication of the correct selection of leakage reduction parts, as well as provide for the development of additional credit goals for manufactures to reduce the overall leakage rate. [OAR-2009-0472-7206.1, pp.5-6]

The adoption of a test procedure in lieu of set credits will better quantify the A/C Leakage reduction credits. Honeywell recommends that these test protocols be developed through a consortium involving the industry with Governmental Energy Efficiency Improvement Funding. The consortium can build upon existing research that seeks to quantify such efficiencies. For example Souse, 2008, developed such a test protocol for compressor shaft seals that we feel can be adapted to test standstill, running mode, and endurance cycling tests to age a system over a temperature range, vibration conditions, and oxygen/temperature control for plastics embrittlement. [OAR-2009-0472-7206.1, p.6]

New York State Department of Environmental Conservation

Air Conditioning Leakage Credits (Preamble Section III.C.1)
Reductions in air conditioning refrigerant leaks can reduce overall greenhouse gas emissions. The regulation should provide a mechanism to encourage designs that reduce refrigerant leakage over the life of the vehicle, and to award appropriate credit. The Department agrees with EPA's proposal to use an engineering analysis based approach rather than emissions testing. [OAR-2009-0472-7454, p.2]

We question the credit formulas proposed in Section 86.1866-12, which differentiate between cars and trucks. While we agree that a larger system has the potential to leak a greater volume of refrigerant this potential is better measured by interior volume (which relates to the volume of air that must be controlled) rather than an arbitrary classification. Using the proposed formulas, a 15

gram/mile CO2-equivalent HFC134a system would qualify for 1.2 grams/mile credit in a passenger car. The same system would qualify for 4.3 grams per mile credit in a light truck. [OAR-2009-0472-7454, p.2]

EPA Response:

Support for AC Leakage Credits

EPA appreciates the supportive comments for our AC leakage crediting program. EPA based the leakage calculation method described in the regulations (§86.166-12) on the August 2008 version of SAE J2727. Note that SAE J2727 is not incorporated by reference into the EPA regulations, and that any future revisions or modifications by SAE to the August 2008 version are not approved for calculating a leakage score unless EPA amends the regulations. While we agree with Honeywell that the SAE J2727-base approach to estimating refrigerant leakage can be improved (in terms of quantifying how leakage increases as the A/C components age), but we also believe that further study into the relationship between component age and leakage is needed before an industry-wide adjustment to the leakage impact can be considered.

In addition, EPA recognizes that there are differences between CARB's approach to A/C-related CO2 emissions and the rule we are finalizing. The principal difference between these two approaches is in the method used to determine the impact of direct (leakage) and indirect (A/C power consumption) CO2e emissions: the CARB approach used a model tailored to the climate and A/C usage conditions specific to California, whereas the EPA approach used a 48-State model for climate and use conditions. Since this is a national rule, it is reasonable to use a 48-State model. In addition, EPA also bases leakage rates on J2727 scores, whereas CARB does not.

Flexibility on Test Procedures

Concerning the comment on allowing flexibility for manufacturers to demonstrate lower leakage rates, EPA will only allow the calculation-based method described in the regulations. While EPA generally prefers performance testing, for an individual vehicle A/C system or component, there is not a strong inherent correlation between a performance test using SAE J2763 and the design-based approach we are adopting (based on SAE J2727, as discussed below).[4] The SAE J2763 test can generate artificially low leakage rates: tests are conducted under idealized conditions (assembled in a laboratory and tested in a hermetically sealed chamber) which reduce the real-world influence of seal contamination and production variability. Consequently, before such test results could be validly considered as a surrogate for the J2727-based scores, the test method and the J2727 scores would have to be correlated. Establishing such a correlation would require testing of a fairly broad range of current-technology systems in order to establish the effects of such factors as production variability and assembly practices (which are included in J2727 scores, but not in J2763 measurements). To EPA's knowledge, such a correlation study has not been done. At the same time, there are indications that much of the industry will eventually be moving toward alternative refrigerants with very low GWPs. EPA believes that even if such a

[4] However, there is a some correlation between the two in that J2763 measurements were used in the development of J2727 scores and to validate the effect on leakage of various technologies, but J2763 test results were never found to be equivalent the J2727 (which considers other factors, such as variance in assembly procedures) .

correlation were established (and confirmed the appropriateness of the J2763 procedure as an option for assessing availability of credits), and some manufacturers were willing to accept the greater testing burden and expense of a J2763-based approach, the program would likely be obsolete at inception due to the expected transition to low-GWP refrigerants. For these reasons, EPA is not adopting such an optional direct measurement approach to addressing refrigerant leakage at this time.

Electric A/C Compressors

EPA acknowledges that A/C compressors powered by electric motors (e.g. as used today in several hybrid vehicle models) were not included in the IMAC study, and we also acknowledge that this type of compressor does allow for leakage emission rate reductions beyond our estimate for systems with conventional, belt-driven compressors. EPA agrees with these comments and has incorporated lower minimum emission rates (i.e. minimum allowable leakage score) into the formula in order to allow additional leakage reduction credits for vehicles that use sealed electric A/C compressors. The minimum rates allowed for electric compressors are 4.1 and 5.2 g/yr for cars and trucks, respectively – which is 50% lower than the rates for belt-driven compressors. See section 86.1866-12 (b) (2) (definition of the Leakage term in the credit equation).

Leakage Score Calculation

AIAM and others commented that EPA should not set a lower limit on the overall leakage score, even for non-electric compressors. EPA has determined not to do so. First, although there do exist vehicles in the Minnesota data with lower scores than our minimum scores, there are very few car models that have scores less than 8.3, and these range from 7.0 to about 8.0 and the differences are small compared to our minimum score.[5] More important, lowering the leakage limit would necessarily increase credit opportunities for equipment design changes, and EPA believes that these changes could discourage the environmentally optimal result of using low GWP refrigerants. Introduction of low GWP refrigerants could be discouraged because it may be less costly to reduce leakage than to replace many of the A/C system components. Moreover, due to the likelihood of some in-use deterioration, even a leak-free (according to J2727) R134a system will have some emissions due to manufacturing variability, accidents, deterioration, maintenance, and end of life emissions, a further reason to cap the amount of credits available through equipment design. The only way to guarantee a near zero emission system in-use is to use a low GWP refrigerant. For these reasons, and in view of the otherwise overwhelming support by commenters for the program as proposed, EPA has decided for the purposes of this final rule to not change the minimum score for belt driven compressors.

Leakage Deterioration and In-Use Adjustment Factors

Many commenters stated that no adjustments for in-use deterioration/aging in J2727 approach to calculating refrigerant leakage are necessary. Honeywell, however, commented that real-world leakage rates are higher that those we cite in our rule, and recommended that we increase the

[5] The Minnesota refrigerant leakage data can be found at http://www.pca.state.mn.us/climatechange/mobileair.html#leakdata

impact of refrigerant leakage in our analysis to account (among other things) for deterioration in use. Given the level of effort needed to measure in-use leakage rates due to deterioration (as well as the complexity in determining a statistically-significant, industry-wide leakage-vs-age relationship), EPA is not considering a refrigerant leakage deterioration adjustment factor for this rule. Awarding credits for surpassing leakage-based performance also appears to be an undeserved windfall: credits are based on exceeding a baseline reflecting good performance. Moreover, as explained in the previous response, EPA is structuring the A/C credit provisions so as to encourage the ultimate solution of use of low GWP refrigerants, and use of such refrigerants obviates any need to account for in-use deterioration.

5.7.1.2. A/C Efficiency Credits

Organization: Denso International America, Inc.
Ford Motor Company
Jaguar Land Rover
Association of International Automobile Manufacturers (AIAM)
Chrysler Group, LLC (Chrysler)
Volvo Car Corp.
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
BMW of North America, LLC (BMW)
Public Citizen and Safe Climate Campaign
Motor and Equipment Manufacturers Association
Clean Energy Fuels
Honeywell International, Inc.
European Automobile Manufacturers Association
New York State Department of Environmental

Comment:

Denso International America, Inc.

DENSO strongly supports the inclusion of Mobile Air Conditioning (MAC) credits as part of the GHG Rulemaking. These MAC credits have the ability to provide significant GHG benefits in the very near term. Our comments on MAC credits address some of the technical aspects of how indirect credits are awarded and offer some technical suggestions on how the effectiveness of this process could be increased.

DENSO supports the use of a menu-based approach for awarding credits as a short-term approach. In the absence of a well-established test methodology, it provides a clear measure for how credits will be awarded. To further enhance the usefulness of this menu, we would like to make 3 suggestions:

1) Add compressors and internal heat exchangers (IHX) to the list of components that receive credit when exhibiting a COP improvement relative to the 'previous design.' Efficiency

improvements in the compressor and implementation of an IHX show a significant reduction in engine load and thus, the GHG emitted as a result of operating the MAC system.

2) Make a graduated credit amount based on the COP improvement exhibited by each 'improved' air conditioning component. Such an approach would promote incremental improvements in technologies. Such an additional incentive would doubtless result in the additional reduction of GHG due to MAC systems.

3) Remove evaporators from the list of components that are awarded credit if a COP improvement is exhibited. Throughout its history in the MAC system, the evaporator component has not been optimized for the purposes of reducing GHG. The optimizations that have been made to the evaporator were done to reduce packaging size while maintaining the same performance. This typically results in a thinner, smaller evaporator that fits into a tighter space in the vehicle. However, this does not add additional efficiency to the MAC system. [OAR-2009-0472-8765, pp.1-2]

Ford Motor Company

Ford supports the EPA technology based approach for quantifying indirect air conditioning emissions credits. Ford believes that EPA should expand the technologies listed in Table III.C.1-1 to include the technologies highlighted in red. The high efficiency blower and cooling fan should be separated and granted the appropriate credits listed. Recirculated air control with a humidity sensor should be added to the list of technologies adding a humidity sensor enables more aggressive use of recirculated and evaporator temperature control, thus allowing the system to operate more efficiently. Consistent with the Alliance comments, NC control strategies are more sophisticated than simply defaulting to recirculation whenever the outside ambient temperature exceeds 75° F and must manage a host of factors. The requirement should be changed to state, defaults to recirculation whenever the outside ambient temperature exceeds 75° F with provisions for managing cabin defogging and passenger comfort. Thermal expansion valves should also be added to the list of technologies as it improves the air conditioning system efficiency and reduces compressor loads. Likewise, the internal heat exchanger allows the compressor to work more efficiently and should also be added.

For 2014 and later model years, the proposed requirement to demonstrate at least 30% improvement over current average efficiency levels in order to qualify for credits should be changed. A manufacturer should not have to achieve such a large step function in order to receive some credit. A more appropriate method may be to allow full credit for a system that achieves a 30% improvement, and partial credit for systems that achieve less, at least through 2016. This proposal would allow systems that achieve up to 30% improvement the maximum credit allowed, but would also reward other systems that achieve reductions. A system that achieves, for example, an 18% or a 26% improvement also benefits the environment, and there is no valid justification for denying proportional credits for such systems. Improvement in performance can be demonstrated through vehicle system modeling, bench or vehicle level testing. See Table I below [See OAR-2009-0472-7082.1, p. 6 for Table 1] for a recommended approach to partial credits.

Ford has consistently improved the efficiency of the AlC systems in its vehicles. For systems that use alternative refrigerants with global warming potential (GWP) < 150, Ford recommends that EPA extend the technology based approach through 2016 model year. As noted by the EPA, alternative refrigerants may have reduced efficiency. The physical properties of refrigerants are the primary factors in the refrigerant system efficiency. Performance assessments of alternative refrigerants have been conducted by the automotive industry. It has been demonstrated that the physical properties of the alternative refrigerant R1234yf could result in a reduction of efficiency by 5 to 10 percent compared to R134a in use today with a similar refrigerant system and controls technology. The environmental benefit of the reduction in GWP, 1430 to 4, far outweighs the delta in the system efficiency and thus warrants the maximum credit currently allowed. [OAR-2009-0472-7082.1, pp. 5-7]

Jaguar Land Rover

Jaguar Land Rover supports the principle of air con credits and the credit categories suggested by EPA certainly form a useful basis for discussion. We believe that interaction with the industry will enable EPA to refine the categories and include categories not previously identified. [OAR-2009-0472-7213, p.1]

We would recommend that EPA look into:

introducing new credits for humidity sensors;
introducing new credits for efficient solar glazing;
establishing separate credit values for evaporators and condensers;
basing heat exchanger credits on best technology (not on 10% of previous condition);
establishing separate credit values for evaporator blower fans and condenser cooling fans;
introducing new credits for internal heat exchangers that boost evaporator and condenser performance. [OAR-2009-0472-7213, p.1]

The comment above, on using best technology heat exchangers, recognizes that Jaguar Land Rover already uses state of the art heat exchangers and would have difficulty in improving by 10% to qualify for credits. It also recognizes that other OEMs, working from an older baseline, might be able to improve by 10% and qualify for credits whilst still using heat exchangers less efficient than ours. We would like to be credited for what we already do well, not just for improvement. [OAR-2009-0472-7213, p.1]

In relation to credits for the use of recirculated air, this has generated a lot of discussion. On the one hand, using recirculated air undoubtedly saves energy. On the other hand, excessive use of recirculated air can cause screen and window misting, increase CO2 levels in the cabin, cause dry eye problems (especially for contact lens wearers), cause odor problems and even increase the risk of respiratory infection. Jaguar Land Rover uses a sophisticated control strategy to optimize the balance of economy, comfort and safety, frequently making use of partial recirculation. The EPA proposal is too simple as it stands and we would encourage EPA to seek a consensus in the industry, on the optimum way to word this part of the credits proposal. [OAR-2009-0472-7213, p.1]

One item on the current air con credits list that surprised us was credits for an electronic expansion valve. We don't see this as a huge benefit, as there is generally some conflict of interest between the attempts of the compressor to maintain a stable evaporator temperature and the attempts of the expansion valve to maintain a small amount of superheat. The compressor always wins and having an electronic expansion valve does not alter this. [OAR-2009-0472-7213, p.1]

Association of International Automobile Manufacturers (AIAM)

With regard to air conditioning system efficiency credits, EPA also proposes to base credits on a technology menu approach, but only for model years 2012-2013. Thereafter, EPA proposes to require that manufacturers justify credits based on testing using an idle test developed by the Agency. We have several concerns regarding the Agency's proposed idle test approach for a performance-based measurement of air conditioning system efficiency. There are many existing technologies and new ones in development to improve the energy efficiency of air conditioning systems. The efficiency improvement resulting from the application of each technology does not necessarily apply under all operating conditions. For instance, efficiency improvements in engine cooling fans will typically be apparent at engine idle but not necessarily at road speeds. Variable displacement piston compressors are the original and one of the highest value technologies for improving MAC energy efficiency; however, their benefit occurs at low and mid-load conditions - typically road speeds. Testing at high load conditions would not detect their energy benefit when compared to fixed displacement piston compressors. Series Reheat Reduction provides benefits primarily at mid-load conditions. Air Inlet Mixture control provides its benefit at mid and high load conditions when the HVAC system is not already in recirculation mode. [OAR-2009-0472-7123.1, p.12]

In the preamble, EPA requested comments on the potential for using the SC03 test cycle for assessing air conditioning efficiency. While there may be some merits of using the SC03 cycle for this purpose, as we note below, AIAM believes that a focused test program should be carried out in conjunction with industry and other interested stakeholders to determine the best performance test for assessing air conditioning system efficiency. [OAR-2009-0472-7123.1, pp.12-13]

AIAM recommends that the Agency defer action on the adoption of a performance test to assess air conditioning system efficiency and rely on the menu-based approach. EPA should work with the Society of Automotive Engineers Interior Climate Control Committee to develop a more robust test approach that accurately measures system efficiency over a broad range of engine operating conditions. This test procedure could be used to verify the accuracy of the credits set forth in the menu and revise those items as necessary, consistent with the research program recommended above. In addition, such a test program could also assess what, if any, effects new low GWP AC systems may have on test procedure development. It would be especially important to consider the impact of these new AC systems since they will be the dominant AC designs for the foreseeable future. It may be appropriate for EPA to consider an improved performance test for the 2017+ program. [OAR-2009-0472-7123.1, p.13]

Chrysler Group, LLC (Chrysler)

EPA Response to Comments

Re-evaluate the cap on indirect air conditioning credits.

EPA has imposed a cap on the maximum amount of indirect credits at 5.7 g/mi. The indirect credit methodology is a design-based approach that picks from a menu of technologies that are available for credit. The menu is not inclusive of all GHG reducing technologies (e.g., humidity sensor). [NHTSA-2009-0059-0124, p.18]

Recommendation:

Chrysler supports EPA's menu-based approach, as Chrysler and EPA cooperate in this all new GHG reducing arena. However, we believe that the indirect credit cap should be increased to be more in line with NREL and ARB studies, which suggest a maximum indirect credit of 10 to 12 g/mi. [NHTSA-2009-0059-0124, p.18]

Design-Based Approach

Chrysler supports a design-based approach using a technology menu as a simple method that comprehensively captures A/C system efficiency improvements. [NHTSA-2009-0059-0124, p.18]

The OEM's ability to receive credit for indirect A/C emission improvements is limited because not all available technologies are on the menu. These omitted technologies offer significant benefits and need to be recognized for credit. [NHTSA-2009-0059-0124, p.18]

Recommendation:

We support EPA's technology menu design-based approach. However, EPA should consider adding other technologies to this menu without reallocating the current credit values. Reallocating the current credit values is unnecessary since total indirect credits are capped. Adding items to the menu only provides flexibility to manufacturers to use different approaches to achieve GHG reductions. [NHTSA-2009-0059-0124, p.18]

Partial Credits

The indirect credit technology menu should not utilize an 'all or nothing approach.' Partial credit should be given for partial GHG reduction. [NHTSA-2009-0059-0124, p.18]

For example, a system with a pulse width modulated ('PWM') HV AC blower and a resistor controlled cooling fan should qualify for a portion of the 1.1 g/mi total credit from the PWM blower and fan technology menu item. The NPRM does not recognize the reduced GHG benefit of these partial implementations even though they provide significant GHG reductions. [NHTSA-2009-0059-0124, p.19]

Recommendation: EPA needs to recognize the GHG benefits of system efficiency improvements with partial indirect credit. [NHTSA-2009-0059-0124], p.19

Reduced Reheat Strategies

Reducing the amount of air reheated after cooling is a highly effective strategy to reduce A/C system-related GHG emissions. [NHTSA-2009-0059-0124, p.19]

Automatic Recirculation Strategy

Chrysler agrees with EPA that increased use of air recirculation can significantly reduce the thermal load on a vehicle air conditioning system, thereby reducing the load on the evaporator and decreasing the compressor workload. Increasing the use of recirculation will also allow customers to reduce the blower speed more quickly, saving more energy. [NHTSA-2009-0059-0124, p.20]

The NPRM would grant credits only if the A/C system always defaults to recirculation whenever the outside ambient temperature exceeds 75° F. In practice, actual A/C control strategies are more sophisticated than this, managing factors such as passenger compartment air quality, window defogging, and rear passenger comfort. The definitions in the proposed rule for obtaining these credits require modification of these factors. [NHTSA-2009-0059-0124, p.20]

Several studies describe the concern with cabin air quality and CO2 concentration while driving in recirculation mode. SAE International published the most recent study suggesting that with the A/C system in recirculation mode, CO2 can build-up in as little as 15 minutes during slow driving conditions. [NHTSA-2009-0059-0124, p.20]

Strategies to mitigate C02 build-up such as switching to fresh mode (outside air), partial recirculation mode or other methods after the cool down phase of the driving cycle should be allowed. EPA should allow individual manufacturers flexibility in choosing and implementing strategies for maintaining passenger compartment air quality while still earning credits for efficiency improvements. [NHTSA-2009-0059-0124, p.20]

Recommendation:

Chrysler agrees with EPA's proposal to employ recirculated cabin air above 75 ^{O}F ambient temperature. Chrysler recommends that the regulation should allow flexibility in using managed amounts of fresh air primarily for safety and customer comfort. The proposal should not require 100% recirculated air while the system is in heater, blend or defrost modes. [NHTSA-2009-0059-0124, p.20]

The regulation should require that above ambient temperatures of 75 ^{O}F the vehicle must default to recirculation mode during the cool down portion of the drive cycle. This portion of the drive cycle is defined to be when the blower is set to 50% or higher. The system may then shift to managed intake of outside air or partial recirculation based on customer comfort, safety or other factors. [NHTSA-2009-0059-0124, p.20]

Air distribution modes that direct air to the windshield or side glass should be exempt from requiring recirculation mode. These modes are typically run in ambient temperatures where

recirculation mode would not provide much energy saving to begin with but could have significant impact on passenger comfort and safety. A recirculation strategy that is ambient temperature-based and compensated for A/C system modes that distribute air to the vehicle glass should be qualified for A/C credit. [NHTSA-2009-0059-0124, p.20]

Electronic Expansion Valve (EXV)

There are concerns with electronic expansion valves harming compressor durability due to the risk of sending liquid refrigerant to the compressor when trying to control to low superheat. The benefits of the electronic expansion valve were minimized when evaluated on vehicles during the SAE IMAC studies. The benefit from electronic controlled expansion valves is further reduced when using reduced reheat strategies. [NHTSA-2009-0059-0124, p.21]

Recommendation:

Chrysler would recommend removing the credit for the electronic expansion valve and allow other GHG reducing technologies on the menu. [NHTSA-2009-0059-0124, p.21]

Oil Separator

Chrysler believes that better definition of an oil separator to qualify for credits is required. The effectiveness of an oil separator varies based on operating conditions such as evaporator and condenser load, ambient conditions and engine speed. [NHTSA-2009-0059-0124, p.21]

The amount of oil must also be balanced to meet overall compressor durability. Insufficient oil circulation will increase compressor operating temperature and wear. Both of these conditions could lead to increased compressor work and reduced A/C system coefficient of performance ('COP'). [NHTSA-2009-0059-0124, p.21]

Recommendation:

The definition of an oil separator should be based on an easily verifiable set of design features that uses centrifugal force to separate the oil from refrigerant on either the high or low pressure side. [NHTSA-2009-0059-0124, p.21]

If a test is required to verify the effectiveness of an oil separator then it should be performed on the supplier's bench and be limited to 3000 rpm or less, (typical vehicle usage speed).[NHTSA-2009-0059-0124, p.21]

Humidity Sensor

Mobile A/C systems remove moisture from incoming air to control air discharge temperature. Compressor control is one way by which this is accomplished. Compressor operation quickly removes sensible heat from the air thereby lowering the temperature. Frequently the compressor continues cooling the air by removing the latent heat due to moisture from incoming air. However, the compressor is cycled when occupant comfort is determined by indirect means

(e.g. discharge air temperature) and compressor control is less refined than could be had with a humidity sensor. The humidity sensor helps determine the amount of dehumidification needed to achieve passenger comfort and therefore the amount of compressor on-time needed. Controlling humidity in a passenger cabin can significantly reduce indirect GHG emissions related to A/C system operation. [NHTSA-2009-0059-0124, pp.21-22]

Recommendation:

Chrysler recommends that EPA add humidity sensor to the indirect technology menu and assign a value of at least 5 g/mi CO2e credit. [NHTSA-2009-0059-0124, p.22]

Non-A/C Equipped Vehicles

Vehicles that are not equipped with an A/C system cannot leak refrigerants and do not consume fuel for A/C system operation. As such they should be rewarded maximum A/C credit. [NHTSA-2009-0059-0124, p.24]

Volvo Car Corp.

If MAC idle test is kept, VCC believes the proposal needs to be clarified. Please see MAC recirculation. Several studies describe concerns with CO2 concentrations in the air of the passenger compartment while driving in recirculation. High CO2 concentrations lead to drowsiness, headache, fogging etc that may reduce the driver's ability to safely drive the vehicle. There are several ways to mitigate CO2 build-up e.g., by switching to outside air, partial outside air or other methods after the cool down phase. These strategies are best managed by the vehicle manufacturers on a vehicle-specific basis. EPA should allow the manufacturers the flexibility to choose among these strategies to maintain relevant air quality levels for safe driving while still earning credits for efficiency improvements.

Alliance of Automobile Manufacturers (Alliance)

Although there are substantial potential MAC efficiency improvements based on known technologies, the EPA proposal needs modifications in order to create the right incentives to fully utilize these technological improvements. Prior to 2014, EPA proposes basing MAC indirect credits on the application of MAC efficiency technologies from a list, with a credit amount assigned to each technology on the list. Beginning with MY 2014, EPA discusses first testing MAC efficiency in either an idle test or a modified SC03 test, and then allowing those vehicles that surpass fleet averages by a minimum threshold on the test to then earn credits based on their use of technologies from the list. [OAR-2009-0472-6952.1, p.10]

MAC efficiency is best evaluated over a range of operating conditions that are, in total, representative of the real world. Because of the wide range of temperature, humidity, solar load, and other climate conditions that drivers encounter in various regions and seasons, precise estimates of overall efficiency are best derived from analytical techniques such as computer simulations. The GREEN MAC Lifecycle Climate Change Performance (LCCP) model developed with EPA provides a good framework for evaluations across a representative range of

operating conditions. It is not practical to attempt either vehicle or MAC system efficiency tests over such a wide range of conditions as are actually encountered by most drivers. While automobile manufacturers each have proprietary energy consumption analysis simulation tools, it would take some time for EPA to establish a common, public one for purposes of this regulation. Therefore, the proposed "menu" technology list approach is a good, simplified way to get an early start toward incentivizing implementation of more efficient technology. [OAR-2009-0472-6952.1, p.10]

Some modifications to the technology list would create a better incentive structure for rapid progress toward implementing these technologies. [OAR-2009-0472-6952.1, p.10] [[See OAR-2009-0472-6952.1, pp.10-26 for a detailed discussion about the modifications to the technology list]]

Toyota Motor North America

EPA proposes that manufacturers making improvements in A/C systems to increase efficiency should be awarded credits based on the CO2 emissions reductions that would result. EPA's proposal uses a design based menu approach to quantify improvements in A/C efficiency and also proposes to begin requiring manufacturers to confirm that technologies applying for these efficiency credits are measurably improving the system efficiency. [OAR-2009-0472-7291, pp.20-21]

Prior to 2014, EPA proposes basing MAC indirect credits on the application of MAC efficiency technologies from a menu, with a credit amount assigned to each technology on the menu. Figure 10 below shows Toyota's estimates of A/C power consumption reduction that can occur through the adoption of improved A/C technologies. This analysis is based on Toyota Prius - a highly improved A/C system example. [OAR-2009-0472-7291, p.21]

By adopting these technologies, some of which were not listed in EPA's proposed menu, A/C power consumption is reduced by about 50% when compared with the baseline A/C system. EPA proposed that the maximum A/C credit of 5.7 g/mi be based on an equivalency to A/C power reduction of 40%. As a result, each technology would be scaled by this 40% factor and therefore, Toyota suggests a modified menu sheet as shown in Table 1 using the equation below:

Credit (g/mile) = Estimated reduction in A/C CO2 emission (%) / 40 (%) x 5.7 [OAR-2009-0472-7291, p.21]

BMW of North America, LLC (BMW)

The EPA and NHTSA have succeeded in delivering a balanced approach that forces significant change in vehicle designs while at the same time incentivizing innovation that can be credited to any auto maker who can prove the benefits either during the test cycle or through their own documented and verified test results. Beyond this, we support the consideration of credits for improved air conditioning systems as an effective method for reducing greenhouse gas emissions. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 136.]

As noted in our previous submission, BMW supports credits for improved air conditioning systems as an effective method for reducing GHG emissions and improving fuel economy. In addition to the proposed AlC C02 idle test procedure and technology list, BMW recommends the following changes: [OAR-2009-0472-11294.1, p. 1]

The proposed rule includes credit for reduced reheat externally-controlled and variable-displacement compressors. Beyond these technologies, BMW suggests also approving electrical driven compressors since equivalent or even better performance can be achieved. [OAR-2009-0472-11294.1, p. 2]

Furthermore, BMW proposes to modify the definition of oil separator. The definition appears to describe an oil separator outside of the compressor: 'Oil separator means a mechanism which removes at least 50 percent of the oil entrained in the oil/refrigerant mixture exiting the compressor and returns it to the compressor housing or compressor inlet.' Since it is also possible to integrate an oil separator into the compressor, the definition should be modified in the following way: 'Oil separator means a mechanism which removes at least 50 percent of the oil entrained in the oil/refrigerant mixture exiting the compressor *or exiting a similar compressor without an external oil separator* and returns it to the compressor housing or compressor inlet.' [OAR-2009-0472-11294.1, p. 2]

Public Citizen and Safe Climate Campaign

EPA proposes to give credits for changing refrigerants and improving air conditioning efficiency. The European Union is requiring automakers to switch air conditioning refrigerants, so these credits will be a windfall for automakers. These credits could cause the second largest reductions in the standard an automaker must meet. We urge that these credits be predicated on "additionality." That is, EPA must safeguard against granting automakers valuable compliance credits for improvements they were planning to make in absence of regulation. EPA and NHTSA still receive product plan information from automakers, although this information is no longer used as the principal basis on which the agencies set the level of the standards. The product plans could be used by EPA to establish whether credits for refrigerant switching are additional. [OAR-2009-0472-7050.1, p.8]

Motor and Equipment Manufacturers Association

Credits for A/C Systems Must Accurately Represent the Benefit of the Technology.
MEMA appreciates the efforts to quantify the true affect of air conditioning systems (A/C) on vehicle fuel economy. Importantly, the credit system proposed can provide the incentive to invest in the additional technologies/products needed to help reduce the fuel consumption by the A/C system. To accomplish this, the credit system must accurately represent the benefits of the significant energy saving technologies. [OAR-2009-0472-7121.1, p.7]

[See Docket OAR-2009-0472-7121.1, pp. 7-9 on detailed comments pertaining to Energy Calculations and Credits, Revise the Single-Vehicle Test Protocol, and Summary of Recommended Emission Credits. Also see OAR-2009-0472-7121.1, Appendix A for Summary of 2000 Compressor Power Consumption Study]

Clean Energy Fuels

Clean Energy would like to better understand the proposal for air conditioning credits based on Table III.A.3-2, whereas projected FFV credits receive 6 credits in 2012 and 0 credits in 2016 and air condition efficiency credits receive 3.1 credits in 2012 and 10.6 credits in 2016. While we support and courage federal efforts that verify that FFVs and dual-fueled alternative fuel vehicles actually operate on alternative fuels beginning in 2016, we believe dual-fueled alternative fuel vehicles powered by natural gas - due to their significant incremental costs - are more likely to operate on natural gas due to cost savings associated with the fuel whereas the cost savings are more questionable with ethanol. Specifically, the cost of a NGV conversion is significantly greater than the conversion costs associated with Ethanol 85 vehicle. Failure to take advantage of the cost savings associated natural gas as a transportation fuel defeats the very economic reason for performing a NGV conversion. [OAR-2009-0472-7220.1, p.7]

With this understanding of dual-fueled alternative fuel vehicles powered by natural gas, it is difficult to understand how improving the air conditioning efficiencies of a vehicle receives more credits than dual-fueled alternative fuel vehicles. dual-fueled alternative fuel vehicles, that demonstrate the use the alternative fuel, provide both GHG and foreign oil displacement benefits. Air conditioning units, on the other hand, appear to only address GHG emissions and, yet, they receive more credit. This seems counter-intuitive to the proposed National Program's multiple goals as something that achieves half of the objectives should only receive half of the credit. Clean Energy is further concerned that, by providing generous credits to air conditioning efficiency improvements, this will provide yet another obstacle to the production of vehicles that are more efficient, operate on low to ultra low carbon fuels, or combine both strategies. Clean Energy opposes this generous issuance of credits as it clearly is intended to water down the rulemaking. [OAR-2009-0472-7220.1, p.7]

[[Clean Energy also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 136-137.]]

Honeywell International, Inc.

Recommendations to improve A/C efficiency credits proposal (indirect emissions)

Honeywell supports EPA's proposal to make available A/C Efficiency Credits for actions manufacturers can take to improve air conditioning efficiency and reduce fuel consumption. However, we argue that EPA can improve its proposed program so that availability of A/C system credits are based upon verifiable data and the best available science. The Proposed Rule provides credits for A/C system efficiency improvements based on a checklist style approach that Honeywell feels is not warranted for efficiency credits for operating systems over wide ranges of operating conditions. In lieu of this approach, we recommend components of A/C system efficiency are tested individually where such testing is feasible. [OAR-2009-0472-7206.1, p.6]

For example, we concur with EPA's estimate of a 0.9 g/mi CO2 A/C efficiency potential credit for Improved Blower and Fan Motor Control. However, instead of a pre-established credit, we believe that the blower and fan pulse width modulation ('PWM'), credits may be quantified easily and tested independently of A/C performance testing using a simple procedure based on the time spent with blower and engine cooling fan 'on time' due to operation of the A/C and heater controls. While a specific procedure currently does not exist, it is easy to visualize a simple time-weighted test based on the typical usage parameters like those in the Green-MAC-LCCP and outlined in SAE Standard 12766 - Life Cycle Analysis to Estimate the CO2 -Equivalent Emissions from MAC Operation to develop the correct on/off times and associated energy savings. An approach that implements some test certification, instead of the checklist strategy, is critical to reflect real-life operating conditions because substantial variance that results from the type of implementation of the fan, its blower PWM controls, and the strategy utilized to improve the energy efficiency. The mere presence of a PWM control does not necessarily optimize the use of the controller and thus save energy; as ,such a check-list credit will not reflect accurately actual avoided GHG emissions. [OAR-2009-0472-7206.1, p.6]

EPA states that manufacturers seeking to generate A/C Efficiency Credits use specific performance tests for model years 2014 and later. We believe that EPA should expedite the use of specific performance tests to reflect real-world operating conditions and emission displacement. We recommend the use of the SAE Standard 12765- Procedure of Measuring System COP of a Mobile Air Conditioning System on a Test Bench provides the best methodology of gaining energy-efficiency based credits. SAE Standard 12765, when coupled with the Green-MAC-LCCP developed with support of EPA and outlined in SAE Standard 12766 - Life Cycle Analysis to Estimate the CO2 - Equivalent Emissions from MAC Operation, can correctly weight the different operating modes found in the United States to determine an overall country weighting of the vehicle miles traveled for the fleet. [OAR-2009-0472-7206.1, p.7]

With respect to the individual efficiency-improving A/C Technologies and Credits proposed in Table III C. 1-1 of the Preamble, we provide the following comments and suggestions: [OAR-2009-0472-7206.1, p.7]

Honeywell disagrees with the calculation of reduced reheat using an externally-controlled, variable-displacement compressor credit

Honeywell questions whether an external control delivers better energy efficiency of compressor operation over internal controls based on conditions within the A/C system. This inference is not founded fundamentally since the external effect directly impacts the internal controls, i.e. if the cooling load is high with high temperature air flowing over an evaporator core. In this scenario, the evaporation pressure in the evaporator is also high, as the thermostatic expansion valve allows more refrigerant to flow through the evaporator to carry away heat through the pure fluid pressure-temperature relationship (PT chart). If the cooling load is low, then the reduced airstream temperature corresponds to a low evaporation pressure, which can be used as a control to reduce the compressor displacement and save energy. Both internal controls and external controls can give the desired efficiency improvements if implemented correctly. [OAR-2009-0472-7206.1, p.7]

EPA Response to Comments

In the DRIA, EPA suggests that reheat is a penalty on system efficiency. While this assessment is correct for dry regions, reheat is a method to control the humidity in an operating system, particularly in the eastern U.S. where humidity levels can be very high during the summer months. Since both internal and external controls typically feed to the onboard computer for system operation, both types of controls can manage system operation effectively. [OAR-2009-0472-7206.1, p.7]

Internal, external, and compressor controls should be validated through a testing protocol such as SAE Standard J2765 - Procedure of Measuring System COP of a Mobile Air Conditioning System on a Test Bench. Honeywell suggests that the credits be applied for optimization of all types of system controls relative to the total energy saved to a current production system. [OAR-2009-0472-7206.1, pp.7-8]

Reduced reheat using an externally-controlled, fixed displacement or pneumatic variable-displacement compressor credit

Honeywell's comments are the same as in section 2.1, above. [OAR-2009-0472-7206.1, p.8]

Defaulting to recirculated cabin air credit

EPA proposes to provide a credit for A/C systems that default to recirculated cabin air whenever the outside ambient temperature is higher than 75 degrees Fahrenheit. While Honeywell agrees that the use of recirculated air does reduce the energy required to operate the vehicle air conditioning during times of high ambient temperature, we also believe that placing a default position to recirculation may cause other problems specific to the automotive application. Specifically, while the humidity can be managed through the use of a humidity sensor, the indoor air quality or CO2 concentrations may exceed the ASHRAE 62 guideline value of 1,000 ppm for normally occupied spaces. Note that due to occupant respiration the CO2 value may rise to a 2 percent saturation value and induce a state of drowsiness, or in the extreme, driving while impaired ('DWI'). [OAR-2009-0472-7206.1, p.8]

Honeywell recommends that if a default recirculation door placement is to be specified by the credit rule, then additional safety devices will be required for driver/occupant operational safety. [OAR-2009-0472-7206.1, p.8]

Improved blower and fan motor controls credit

Honeywell concurs with EPA's estimate of a 0.9 g/mi CO2 A/C Efficiency Credit for Improved Blower and Fan Motor Control. Instead of a pre-established credit, however, we believe that the blower and fan PWM credits may be quantified easily and tested independently of A/C performance testing using a simple procedure based on the time spent with blower and engine cooling fan 'on time' due to operation of the A/C and heater controls. While a specific procedure does not exist currently, it is easy to visualize a simple time weighted test based on the typical usage parameters like those in the GreenMAC- LCCP and outlined in SAE Standard J2766 - Life Cycle Analysis to Estimate the CO2 -Equivalent Emissions from MAC Operation to develop the correct on/off times and associated energy savings. Once again, a testing procedure is preferable

to a checklist strategy here because of the variable impacts of implementation of the fan, the blower PWM controls, and the strategy utilized to improve the energy efficiency. In production, these systems will be supplier dependent with some suppliers providing a superior strategy to provide an energy saving system (controller and motor combination), while other suppliers may only provide a basic PWM system that is not optimized and thus insufficient to save energy or GHG equivalents. [OAR-2009-0472-7206.1, p.8]

Electronic expansion valve credit

Honeywell requests the EPA revise its assumptions related to the Electronic Expansion Valve ('EXV') and modify the available A/C Efficiency Credit accordingly. Unfortunately, the description of the operation of a conventional thermostatic expansion valve ('TXV') provided in the DRIA is incorrect. EPA states that a TXV uses an internal temperature reference to assure a constant temperature level for the expanded refrigerant gas typically a few degrees Celsius above the freezing point of water. However, Honeywell suggests that a properly operating TXV does not control the evaporator temperature to a constant value a few degrees Celsius above the freezing point of water. In contrast, a correct TXV maintains a constant superheat of generally 2 to 5 degrees Celsius above the boiling point imposed by the evaporator loading. That is, a properly sized TXV design is intelligent enough to sense when cooling is required based on the cooling characteristic imposed by the operator. The TXV then adjusts to feed or restrict flow to the evaporator based on the amount of refrigerant needed to balance the load. Proper TXV selection also involves determination of a default size, where as the freezing point of water is approached the flow of refrigerant is maintained such that the evaporator is not over-cooled, wasting energy and causing core freeze up. The general operation of electronic expansion valve is to take a measurement of the suction pressure and cooled air output temperature to determine the proper algorithm for opening or closing the valve. [OAR-2009-0472-7206.1, p.9]

While the electronic expansion valve may offer some advantages when vehicle operation is on the border of conventional TXV control bands, we question that the mere inclusion of an electronic expansion valve is sufficient to determine the proper setting of the valve and control algorithm. We advise that advancements with the electronic expansion valve over the TXV be demonstrated by the vehicle or component manufacture over a base operation valve over a range of operating conditions such as those found in SAE Standard J2765. [OAR-2009-0472-7206.1, p.9]

Improved-efficiency evaporators and condensers credit

EPA proposes an Efficiency Credit for the use of improved evaporators and condensers. Honeywell concurs with EPA that SAE Standard J2765 - Procedure of Measuring System Coefficient of Performance of a Mobile Air Conditioning System on a Test Bench should be used to show system improvements in energy efficiency and cooling capacity of systems. [OAR-2009-0472-7206.1, p.9]

Oil separator credit

EPA Response to Comments

EPA proposes an Efficiency Credit for manufacturers if oil is prevented from circulating throughout the A/C System due to inefficiencies resulting from heat transfer effectiveness. While large amounts of oil circulating in an operating system can impact the overall efficiency of a system, Honeywell suggests that if the oil separator is not properly designed, the pressure drop losses due to the flow of refrigerant through such a device may negatively impact the efficiency of a system. EPA calculates the credit based upon the findings of the SAE IMAC team for a standard credit of 0.6 g/mi CO2. Instead, we submit that the impact of oil separators be tested identically to evaporators and condensers by using SAE Standard J2765- Procedure of Measuring System COP of a Mobile Air Conditioning System on a Test Bench to determine the overall efficacy and resulting credit of such an additional device. Using the SAE Standard J2765 will enable the accurate determination of the efficiency of such a technology. [OAR-2009-0472-7206.1, pp.9-10]

European Automobile Manufacturers Association

Credits for improving efficiency

The EPA proposal combines credits for improved evaporators and condensers, and PWM fan and PWM blower. ACEA proposes not to combine the credits for the components, because every optimized component represents an improvement. Each improvement should achieve a credit. If one of the optimized components will be used, a credit should be realized.

Default recirculation:

It is not always favorable to use recirculation at 75F, because there are a lot of different parameter which influences the benefit: The benefit of recirculation depends on set point air temperature and also on different external conditions like heat pick up from engine hood. So it should be possible to get the credit if there is an intelligent air recirculation control, which takes into account these different parameters. [OAR-2009-0472-7444.1, p.1]

Credits for reduced reheat: it is also possible to realize reduced reheat by an electrical compressor, so we suggest to adjust the wording like that: "..Reduced reheat, with either externally-controlled, variable-displacement compressor, or fixed / internally controlled compressor with a control of the ON/OFF temperature threshold , or electrical compressor: 1.7 g/mi.; [OAR-2009-0472-7444.1, p.1]

Credits for improving efficiency (2)

Oil separator: the definition describes an oil separator outside the compressor: "Oil separator means a mechanism which removes at least 50 percent of the oil entrained in the oil/refrigerant mixture exiting the compressor and returns it to the compressor housing or compressor inlet". [OAR-2009-0472-7444.1, p.2]

As it is possible to integrate an oil separator into the compressor the definition should be independent. [OAR-2009-0472-7444.1, p.2]

Credits for improving efficiency (3)

Improved evaporators and condensers : the definition references to a standard which is not defined: "Improved evaporators and condensers means that the coefficient of performance (COP) of air conditioning system using improved evaporator and condenser designs is 10 percent higher, as determined using the bench test procedures described in SAE J2765 "Procedure for Measuring System COP of a Mobile Air Conditioning System on a Test Bench," when compared to a system using standard, or prior model year, component designs. SAE J2765 is incorporated by reference; see §86.1." [OAR-2009-0472-7444.1, p.2]

The reference to prior model year means that OEM which uses already improved heat exchangers in the prior model year, do not get any credit. So we suggest to make an absolute definition like an heat exchanger efficiency. For evaporators / condensers we recommend thresholds based on current technology, e.g.:

Improved evaporators (tube to tube spacing <14 mm) and condensers (tube to tube spacing <12 mm) [OAR-2009-0472-7444.1, p.2]

These are the same thresholds as in our recommendation on page 12 -- The following recommended thresholds represent high efficiency standards based on the current state of technology: Condensers: Micro channel tubes with optimized flat tube-to-tube spacing ≤ 12mm. Evaporators: Optimized flat tube-to-tube spacing ≤ 14 mm. [OAR-2009-0472-7444.1, p.2]

An internal heat exchanger should be added to the list of components/credits. [OAR-2009-0472-7444.1, p.2]

Credits for improving efficiency (4)

Credits for improved glazing and shading: We suggest to integrate possible credits for improved glazing and integrated shading in the GHG. [OAR-2009-0472-7444.1, p.2]

New York State Department of Environmental Conservation

Air Conditioning Efficiency Credits (Preamble Section III.C.1)
EPA is also proposing an engineering analysis based credit program for air conditioning efficiency. Beginning with the 2014 Model Year a vehicle will have to meet a threshold test in order to be eligible for the credits. This threshold is a maximum of 14.9 grams/minute higher CO2 emissions at idle with the air conditioning on than with the air conditioning off. [OAR-2009-0472-7454, p.2]

Testing by the Department suggests that many existing vehicles, particularly smaller cars, can nearly meet the proposed threshold. However, a minivan exhibited emissions more than twice the proposed threshold. This suggests that large interior volume vehicles may have no chance of meeting the threshold for credits. In that case manufacturers have no incentive to invest design and production resources into improving the efficiency of the air conditioning systems for these vehicles. This deprives the environment of the benefits of improvements to the largest air

conditioning systems. EPA should consider an alternate threshold that varies with interior volume, at least until a certification emissions testing method for the incremental emissions due to air conditioner operation can be developed. [OAR-2009-0472-7454, p.2]

EPA Response:

A/C Idle Test Threshold

Several commenters noted that the proposed 30% reduction in emissions on the A/C Idle Test to qualify for efficiency credits was not desirable, as vehicles which came close to, but did not exceed, the threshold would receive zero credit for any of the efficiency-improving technologies on their vehicles. In addition, the New York State Department of Environmental Conservation commented that small cars could easily meet the proposed threshold, whereas vehicles with larger interior volumes would not. EPA examined the results of vehicles tested during development of the A/C Idle Test and found little correlation between interior volume and the incremental change in idle test results (A/C on vs off). Because there is environmental benefit (reduced CO2) from the use of even some of these efficiency-improving technologies, EPA believes it is appropriate to scale the A/C efficiency credits to account for these partial improvements. We therefore are modifying our proposed approach on this issue by allowing some credit to still be earned on those vehicles which do not meet or exceed the threshold, while making a multiplicative credit adjustment factor to the eligible credits. This factor will be scaled from 1.0 to 0, with vehicles demonstrating a 30% or better improvement (14.9 g/min or lower) receiving 100% of the eligible credit (adj. factor = 1.0), and vehicles demonstrating a 0% improvement - 21.3 g/min or higher result -- receiving no credit (adj. factor = 0)). See 86.1866-12 (c)(5) (iii) (B).

Elimination of EXV Technology from the Menu

Many comments were received stating that the EPA estimate for EXV efficiency was too high, that no manufacturers were developing this technology within the timeframe of this rulemaking, and that it should not be included on the list of efficiency-improving technologies. These commenters noted that the SAE IMAC report (from which we referenced the expected efficiency improvement) utilized an EXV in conjunction with a more efficient compressor – and not as a standalone technology. Given the uncertainty in the effectiveness of EXV technology, and that no manufacturers seem to plan on utilizing it, we have removed this technology from the list of efficiency-improving technologies and credits.

Inclusion of IHX Technology in the Menu

Many commenters requested that an internal heat exchanger, or IHX, be added to the design menu. EPA initially considered adding this technology, but in our initial review of studies on this component, we had understood that the value of the technology is limited to systems using the alternative refrigerant HFO-1234yf. Some manufacturers, however, commented that an IHX can also be used with systems using the current refrigerant HFC-134a to improve efficiency, and that they plan on implementing this technology as part their strategy to improve A/C efficiency. Based on these comments, and projections in a more recent SAE Technical Paper, we project

that an IHX in a conventional HFC-134a system can improve system efficiency by 20%, resulting in a credit of 1.1 g/mi.[6]

Control of Recirculated Cabin Air

In response to comments concerning the applicability and effectiveness of technologies that were or were not included in our analysis, we have made several changes to the design-based menu.[7] First, we have separated the credit available for 'recirculated air'[8] technologies into those with closed-loop control of the air supply and those with open-loop control. By "closed-loop" control, we mean a system that uses feedback from a sensor, or sensors, (e.g., humidity, glass fogging, CO_2, etc.) to actively control the interior air quality. For those systems that use "open-loop" control of the air supply, we project that since this approach cannot precisely adjust to varying ambient humidity or passenger respiration levels, the relative effectiveness will be less than that for systems using closed-loop control. Consequently, such systems should not automatically receive the same credit as an open-loop system. The final rule therefore provides that open-loop control at different temperatures may receive credits on a case-by-case basis upon EPA approval of an engineering analysis submitted by the manufacturer. See 86.1866-12 (c) (iii).

Improved Evaporators and Condensers

In response to comments, we have modified the definition of 'improved evaporators and condensers' to recognize that improved versions of these heat exchangers may be used separately or in conjunction with one another, and that an engineering analysis must indicate a COP improvement of 10% or better when using either or both components (and not a 10% COP improvement for each component). Furthermore, we have modified the text of the regulation from proposal to clarify what are considered to be the 'baseline' components for this analysis. See 86.1866-12 (c) (v). We consider the baseline component to be the version which a manufacturer most recently had in production on the same vehicle design or in a similar or related vehicle model. The dimensional characteristics (e.g. tube configuration/ thickness/spacing, and fin density) of the baseline components are then compared to the new components, and an engineering analysis is required to demonstrate the COP improvement.

Efficiency Difference Between HFO1234yf and R-134a Refrigerants

In the proposal, EPA had requested comments on whether the efficiency credit for alternative refrigerants should be adjusted. Although a few commenters noted that the efficiency of an HFO1234yf system may differ from a current HFC-134a system,[9] we believe that this difference does not take into account any efficiency improvements that may be recovered or gained when

[6] Mathur, Gursaran D., "Experimental Investigation with Cross Fluted Double-Pipe Suction Line Heat Exchanger to Enhance A/C System Performance," SAE 2009-01-0970, 2009.
[7] Commenters included the Alliance of Automobile Manufacturers, Jaguar Land Rover, Denso, and the Motor and Equipment Manufacturers Association, among others.
[8] Recirculated air is defined as air present in the passenger compartment of the vehicle (versus outside air) available for the A/C system to cool or condition.
[9] Ford noted that "the physical properties of the alternative refrigerant R1234yf could result in a reduction of efficiency by 5 to 10 percent compared to R134a in use today with a similar refrigerant system and controls technology."

the overall system is specifically designed with consideration of the new refrigerant's properties (as compared to only substituting the new refrigerant). In addition, Ford noted that the environmental benefit of reducing the GWP from 1430 to 4 far outweighed any potential decrease in system efficiency, and that they supported the maximum credit for use of an alternative refrigerant, as provided by this rule. EPA agrees with these points. Moreover, the agency believes that the idle test used from MY 2014 on as a precondition to obtaining efficiency credits will help ensure that the alternative refrigerant systems will be properly calibrated for efficiency (at least at idle) so as to minimize "backsliding". EPA is therefore not adjusting the credits based on efficiency differences for this rule.

Modifications to the Design-Based Menu

Several commenters requested that adjustments be made to the design-based menu for certain technologies, or that partial credits be granted for technologies which come close to, be do not meet, the requirements set forth in this rule. EPA acknowledges that any design-based approach is imperfect (in that it cannot capture every design nuance or technology advance that may occur during the timeframe of the rule), but we feel that this approach is sufficient in that it encourages the use of current state-of-the-art A/C technologies on vehicles. For technologies such as scroll compressors, which operate more efficiently at high engine speeds than at idle speeds, we believe that the A/C Idle Test is still a valid tool for quantifying the overall efficiency of an a A/C system, as idle time is a significant portion of daily driving. It thus is reasonable to use an idle test as a screening tool. Moreover, any vehicle with a compressor design, or A/C component, which does work effectively at idle will likely exhibit poor cooling system performance under this condition (i.e. when interior cooling is especially desired by consumers), and so is unlikely to be used in high volumes by manufacturers.

5.7.1.3. Idle Test Procedure

Organization: Ford Motor Company
Honda Motor Company
Association of International Automobile Manufacturers (AIAM)
Chrysler Group, LLC
Environmental Defense Fund
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
National Renewable Energy Laboratory
California Air Resources Board
Honeywell International, Inc.
European Automobile Manufacturers Association
New York State Department of Environmental Conservation
Yuli Chu

Comment:

Ford Motor Company

Ford has concerns regarding vehicle testing such as the A/C idle Test as an accurate means to measure the effect of A/C operation. Using the delta between two tests increases uncertainty and is not a robust test approach. Ford performed a simple control parameter study, via Computer Aided Engineering (CAE), that shows inherent variability in the proposed idle test. The results are shown in Chart I: Compressor Power Variability below. [See OAR-2009-0472-7082.1, p. 7 for Chart I]

Ford has experience in running A/C on versus A/C off fuel consumption tests in climatic wind tunnels. As shown in Table II [See OAR-2009-0472-7082.1, p. 7 for Table II] the data shows inherent variability. Idle conditions are the most difficult to control. Facility correlation across industry and government laboratories is also a concern.

In addition, A/C idle results for HEV are highly dependent on the state of charge (SOC) of the vehicle prior to the test. Preconditioning of the vehicle does not define SOC starting requirements for this test. A/C idle test cell ambient conditions will require all idle tests to be conducted in environmental chambers which are already fully utilized for other required certification tests. Ford validates ambient test cell environments at 68-86 °F and 50 ± 10 gr/lb. The proposal is for 75±2°F and 50±5 gr/lb. While Ford has a set point of 75°F, the tight control on temperature and humidity could only be achieved in an environmental chamber. This is impractical from a facility standpoint. Ford recommends that the temperature not vary more than ± 5°F from the start of the test and that the humidity be expanded to 50±10 from ±5 gr/lb.

Inclusion of the SC03 test (air conditioning test procedure) into the 5-cycle FE requirement has already taxed the fully utilized environmental chambers. Adding another SC03 cycle would require significant incremental facility investments. The proposed SC03 test for A/C credits would be conducted at environmental conditions different from FE tests meaning that additional environmental chamber testing is required. In addition, the proposed test cycle includes phases without A/C operation and at manual A/C operation points that are not included in the FE test which also prevents optimizing facility usage. [OAR-2009-0472-7082.1, pp. 7-8]

Jaguar Land Rover

Jaguar Land Rover understands the intention of the proposed air con idle test, as a simple test that could be carried out in existing emission facilities. However, we consider it would not be a reliable indicator of overall air con efficiency. For instance, consider the case of a vehicle fitted with a scroll compressor. Such compressors are among the most efficient at normal road speeds, but do not perform well at low speed, including idle conditions. Vehicles equipped with scroll compressors would therefore be unfairly penalized in this test. [OAR-2009-0472-7213, p.2]

Honda Motor Company

EPA proposes a new idle-test to determine whether or not a vehicle qualifies for the design-based air conditioning credits. Honda has three concerns with this approach. First, the idle-test, proposed by EPA, does not adequately represent a good metric to determine whether an A/C system is improved or not. Second, EPA's idle-stop capable vehicles' exemptions from the idle

test, and third, the idle test threshold is an "all or nothing" condition that results in unfair treatment. [NHTSA-2009-0059-0095.1, p.8]

Idle Test

In general, the idle test that EPA describes, represents only one condition among many in typical driving cycles. This test will potentially disadvantage technologies which are less effective at idle yet more effective at a higher rpm ranges (e.g. scroll-type compressors). We support AIAM's proposal for studying a better approach with a 3rd party, together with EPA and industry. [NHTSA-2009-0059-0095.1, p.8]

Exemption from Idle Test

In the idle-test, EPA offers an exemption from the "threshold" if the vehicle's air conditioning system is "solely powered by electricity" and can operate while the engine remains off for "at least 2 minutes." [NHTSA-2009-0059-0095.1, p.8]

Honda believes that these criteria are unnecessarily restrictive. Honda's Civic Hybrid has an air conditioning system that has two sources of power: electric and engine. During idle stop, this system is able to operate electrically for limited periods of time, but it is not exclusively, nor "solely" powered by electricity. Further, the 2 minute requirement is very restrictive. Honda's own testing of typical driving scenarios in the U.S. (California), Europe (Spain) and Asia (Japan) indicate that the vast majority (more than 90%) of idle events are less than 60 seconds in length (see Attachment 4). Although Honda's idle stop duration is less than EPA's 2 minute requirement, based on market research it provides significant value. Honda trusts that it was not the intent of EPA to exclude technologies like the A/C system in the Civic Hybrid. [NHTSA-2009-0059-0095.1, p.9] [[See NHTSA-2009-0059-0095.1, p.17 for Attachment 4]]

Idle Test Threshold

EPA has established a performance threshold on the air conditioning idle test in order to qualify for design-based A/C credits. This threshold creates an "all-or-nothing" condition, which is bad policy, and bad regulation. These "step functions" unintentionally create winners and losers based on potentially minute and insignificant differences in performance. For example, an A/C system whose idle test score is slightly higher than the threshold would not be rewarded for its improved efficiency. This is a big downside of this policy. In Attachment 5 we show examples of vehicles that have improved air conditioner performance and just miss the threshold of 14.9 grams/minute. Honda does not propose to relax the 14.9 grams/minute threshold, rather, we suggest that EPA create a linear function that seamlessly transitions from 0% of the A/C credits, based upon some average grams/minute value, to 100% of the A/C credits, based upon the 14.9 grams/minute threshold. In this manner, EPA will eliminate the arbitrariness of a single value. [NHTSA-2009-0059-0095.1, p.9] [[See NHTSA-2009-0059-0095.1, p.18 for Attachment 5]]

Association of International Automobile Manufacturers (AIAM)

Testing at idle is not reliably repeatable due to changes in the engine idle speed and especially due to changes/variances in vehicle front-end airflow and temperature due to front-end recirculation (engine heat recirculating to the front face of the condenser). Available field data indicate that engine idling accounts for only 15 to 20% of vehicle use. Therefore, testing only at one engine condition, an idle condition, would not be repeatable nor is it representative of the widely varying conditions and therefore energy used by the MAC system. Relying on the idle test would encourage the use of technology that reduces energy usage at idle in low to mid ambient temperature conditions at the expense of energy efficiency at road speeds and other conditions. Some of the most energy efficient technologies would not show any benefit at this condition – Air Inlet Mixture control (which is capable of up to a 35% reduction in overall A/C energy usage) would not likely show any savings in the proposed EPA test procedure. In summary, the proposed test would not encourage the implementation of many of the most promising technologies that have been developed or are under development. [OAR-2009-0472-7123.1, p.12]

We are also concerned about the impact that the Agency's idle test approach would have on manufacturer and Agency resources. The Agency's proposed concept would establish a new test that would have to be performed by manufacturers and the Agency on large numbers of vehicles to provide data for greenhouse gas compliance purposes. [OAR-2009-0472-7123.1, p.12]

However, if EPA insists that the idle test approach must be included in the final rule, that test should be considered as only one of the parameters that determines the air conditioning credit. In addition, it is unclear why EPA has proposed to grant efficiency credits only if gains in efficiency of at least 30 percent are achieved. *See* preamble at 49530. Under proposed section 86.1866-12(c)(5)(iii), only air conditioning systems that increase emissions by less than 14.9 grams per minute, as measured under the Agency's idle test, would qualify for credits. The Agency should encourage all efficiency improvements, and lesser improvements should receive proportionately smaller credits. [OAR-2009-0472-7123.1, p.13]

Hyundai Motor Company

For MY 2012-2013 MY, EPA proposes to use a technology menu approach for determining A/C efficiency credits. Beginning in MY 2014, EPA proposes the use of an idle test for credit determination and requires a minimum 30 percent system efficiency improvement. We support the comments made by the Association of International Automobile Manufacturers (AIAM) regarding the idle test, including:

• The idle test only represents one aspect of A/C system use.

• Testing at idle may not be reliably repeatable due to changes in the engine idle speed and front-end recirculation (engine heat recirculation to the front face of the condenser).

• New A/C technologies with the potential to improve efficiency may not have efficiency benefits realized during vehicle idle and thus may not be captured by an idle test.

• The idle test will impose a new test procedure and test burden on both industry and EPA.

Like AIAM, Hyundai supports continuing the technology menu approach past MY 2013 and recommends that EPA work with industry to develop an appropriate performance test for potential application with MY 2017 and later GHG standards. [OAR-2009-0472-7231.1, p.6]

Chrysler Group, LLC

The A/C idle test's objective is to quantify GHG emissions related to A/C system operation at a given test condition applicable to all vehicles. The GHG emissions associated with A/C-on operation during the idle test are determined and compared against the GHG emissions associated with the A/C system off. A value of 14.9 grams/minute CO2 is employed, regardless of cabin volume or vehicle footprint, as a threshold below which the A/C system passes. Passing the idle test allows the OEM to use the menu approach to validate A/C indirect credit. Concern exits with the A/C idle test as currently conceived. [NHTSA-2009-0059-0124, p.23]

A concern is that the menu items offering credit will not always contribute to lowered GHG emissions as measured by the A/C system idle test. The three most valuable indirect menu items may not be effective and therefore not captured by idle test:

• Automatic recirculation at 75°F - Due to ambient temperature tolerances, the 75°F automatic recirculation strategy may not be active.

• Variable Displacement Compressor or Fixed Displacement Compressor with reduced reheat strategy - The manual idle test is performed at full cold where a reduced reheat strategy would not be active or at diminished capacity.

• The PWM blower contribution is maximized at low to medium blower speeds not captured by the idle test. The PWM cooling fan is not a major contributor since the fan duty cycle at 75°F and idle engine speed is not considered high. [NHTSA-2009-0059-0124, p.23]

Automatic temperature control A/C systems greatly benefit during the A/C idle test by providing lowered GHG emissions and also provide customer satisfaction benefits for occupant comfort. While this is desirable for OEMs, not all vehicle segments support an automatic climate control system over the standard manual system due to price point. [NHTSA-2009-0059-0124, p.23]

Vehicles with manual temperature control are at a distinct disadvantage relative to those with automatic temperature control systems during the A/C system idle test procedure due to the test boundary conditions. The test boundaries do not represent real world use conditions. [NHTSA-2009-0059-0124, p.23]

Recommendation:

The A/C idle test was developed by testing many different vehicles representing different levels of A/C control strategy sophistication and technology. As can be seen in the scatter of the A/C idle test results, EPA has not correlated A/C idle test performance with vehicle or A/C system parameters, preferring a 'one size fits all' approach of a 14.9 gram CO2/minute threshold. [NHTSA-2009-0059-0124, p.23]

Chrysler believes correlation could be achieved between A/C system parameters and GHG emissions levels and supports investing resources as needed to develop a vehicle A/C test that robustly captures GHG emissions reductions. Chrysler believes the current A/C idle test can be improved by defining baseline sets of vehicle parameters such as compressor type, oil separator type, automatic recirculation, etc., and evaluating the parameters and correlating the results that show a trend. This could be used to fully validate the indirect technology menu in time for the 2017 model year. [NHTSA-2009-0059-0124, pp.23-24]

Environmental Defense Fund

The Proposed Air Conditioning Credits for Determining Compliance with the Clean Air Act Standards Incentivize Reductions in Hydrofluorocarbon Refrigerants, Which Are Potent Greenhouse Gases.

EPA proposes compliance credits for reducing the greenhouse gases associated with air conditioning systems, a policy approach that provides a strong incentive for mitigating hydrofluorocarbon refrigerants, which are powerful greenhouse gas pollutants, as well as the greenhouse gas emissions due to the load associated with the air conditioning operation. 74 Fed. Reg. at 49,482. [OAR-2009-0472-7285.1, pp. 24-25]

The environmental performance and economic flexibility inherent in the overarching systems based approach under the federal Clean Air Act enable manufacturers to secure cost-effective emissions reductions in non-CO2 greenhouse gases and to efficiently optimize CO2 emissions reductions across the entire vehicle system including the air conditioning operations:

EPA is proposing an approach that allows manufacturers to generate credits by reducing GHG emissions related to A/C systems. Specifically, EPA is proposing a test procedure and method to calculate CO2 equivalent reductions for the full useful life on a grams/mile basis that can be used as credits in meeting the fleet average CO2 standards. EPA's analysis indicates this approach provides manufacturers with a highly cost effective way to achieve a portion of GHG emissions reductions under the EPA program. 74 Fed. Reg. at 49,482. [OAR-2009-0472-7285.1, p. 25]

Under the CAFÉ program, these reductions are disallowed for passenger cars. 74 Fed. Reg. at 49,468. EDF strongly supports the proposed EPA standards that incentivize reductions in the harmful greenhouse gases associated with air conditioning systems, an approach consonant with the provisions of the Clean Air Act and sound public policy. [OAR-2009-0472-7285.1, p. 25]

Alliance of Automobile Manufacturers (Alliance)

If a test is to be used, designing the specific test procedure is very important. It would be especially important that any tests include an evaluation of energy consumption at moderate MAC loads. Not only are moderate loads the most commonly encountered conditions in the U.S., but the most attractive near term energy efficiency technologies, such as many of those demonstrated in the IMAC program, tend to give their benefits under moderate loads. At high loads, systems with variable compressors, sophisticated computer control strategies, and other key IMAC technologies may be indistinguishable from older designs without these

improvements. In order to provide the right incentives to fully utilize these technologies, the credit program must identify them as beneficial and award credits accordingly. [OAR-2009-0472-6952.1, p.26]

The modified SC03 and idle tests discussed by EPA are not representative of real world conditions, since they are not performed over a range of temperatures and air conditioner operating conditions. Some efficiency technologies work well at low loads and others at high loads, and a good test would need to cover a variety of conditions like those encountered in the real world. The SC03 cycle is not a good, representative test because it only includes high loads. An SC03 cycle at more moderate temperatures, such as 75° F, would be more representative, but still suffers from the limitations of any test done under a single climate condition. [OAR-2009-0472-6952.1, p.26]

The proposed idle test would also be unrepresentative of actual driving conditions, and would tend to overestimate air conditioner energy consumption. Idle speeds are reduced to absolute minimum levels to improve fuel economy ratings. Idle speeds may therefore be increased in actual driving conditions as accessory loads are added, which would tend to make A/C fuel usage appear to be a higher percent of total fuel usage than under a more representative drive cycle. Other factors also tend to make an idle test overestimate air conditioner energy consumption. Engine heat and pavement heat tend to raise compressor loads during prolonged idle to a much greater extent than occurs in normal driving. Hybrid vehicles or any vehicle with start-stop technology might not adequately be assessed in this test because there would be no guarantee that the engine would be running. [OAR-2009-0472-6952.1, p.26]

Finally, some specific requirements that might be applied, such as no recirculation unless automatically controlled and max settings for all manual systems, are not representative of real world conditions, and thus unfairly penalize certain designs. In any test performed under a single set of climate conditions, a great deal will depend on the specific circumstances and whether or not a vehicle's efficiency technologies start to operate and show their benefits under those specific conditions (and not at a slightly lower or higher load). [OAR-2009-0472-6952.1, p.26]

Any laboratory test program inherently involves thorny problems of test variability, differences among test facilities, test procedure definitions, etc. By creating incentives for applications of known efficiency technologies, the proposed design-based menu approach would capture most of the benefits in this area. Ultimately, the goal should be a more sophisticated system of simulations, or other analytical procedures, that can evaluate system efficiency across the full range of operating conditions. The EPA should utilize the "menu" approach (and eliminate the A/C idle test or any other vehicle testing for the analysis of A/C efficiency) until a common analytical approach for evaluating the efficiency of MAC systems is developed. [OAR-2009-0472-6952.1, p.27]

Test Facilities Impact

The humidity control levels proposed by EPA are typically not met in normal fuel economy test facilities during the summer (four to five months of the year), and more expensive SC03 facilities would be needed during those times. The cost associated with using the more expensive

SC03 test facilities is an additional undesirable impact of the proposed test. [OAR-2009-0472-6952.1, p.27]

In addition, in §86.165-12 New Air conditioning idle test procedure, EPA has proposed a new idle CO2 test to determine the increase in CO2 emissions with AC operation on and off. Concerns are:

• Maintaining the average ambient air temperature of "75 ± 2 °F" over the test duration may require expensive climatic test chambers versus a normal emissions test site.

• §86.165-12 (d)(4), "cumulative flow rate" should be "cumulative mass rate"

• §86.165-12 (d)(5), not sure if it is possible to set a vehicle automatic air conditioning system setting, on all vehicles, to "9 °F" below ambient temperatures. Should allow an alternative if not possible. [OAR-2009-0472-6952.1, p.27]

MAC Test Groups

MAC systems typically use common components across all variants of a vehicle "platform." Variants might include body styles, such as sedan, coupe, or wagon, as well as various powertrain combinations. While hose lengths and joints may differ slightly in order to be routed around the different engines, the overall variations in J2727 scores are usually very small. The systems would all use the same refrigerant as well as the same efficiency technologies. Thus, the EPA MAC program can effectively cover all vehicles using relatively few "tracking vehicles" or test vehicles. This situation differs from tailpipe emissions or fuel economy testing, where many more configurations would need to be tracked in order to gain a representative estimation of fleet averages. [OAR-2009-0472-6952.1, p.27]

Due to these considerations, EPA should only require a single MAC certification for each vehicle platform in order to earn MAC credits for all the vehicles built on that platform. This tracking vehicle could be chosen based on an engineering assessment that identifies the "worst case" MAC variant for the platform. If both single and dual evaporator systems are used on a platform, there should be separate tracking of the single and dual systems. If some variants of a platform use electric compressors, such as hybrid vehicles, the electric compressor variants would also need to be tracked separately. [OAR-2009-0472-6952.1, p.27]

Toyota Motor North America

Beginning in 2014 MY, EPA is considering first testing MAC efficiency using an A/C CO2 Idle Test and then allowing those vehicles that surpass fleet averages by a minimum threshold of 30% on the test to then earn credits based on their use of technologies from the list. [OAR-2009-0472-7291, p.21]

Toyota supports the structure and intent of the credit proposal. However, Toyota is concerned that the A/C Idle CO2 Test is poor representation for evaluating A/C system efficiency because it would tend to overestimate A/C energy consumption. As a result, systems forced to comply with

this test requirement may lead to inappropriate design of A/C systems. Furthermore, hybrid vehicles or any vehicle with start-stop technology might not adequately be assessed in this test because there would be no guarantee that the engine would be running. [OAR-2009-0472-7291, pp.21-22]

Toyota suggests the use of an alternative test procedure for evaluating the A/C efficiency and assigning indirect A/C credit. Toyota proposes the methodology used on the California Environmental Performance label, which incorporates the use of SC03 data. Specifically; Although it can be argued that the load in the SC03 may be a bit higher, Toyota feels that the absolute value of A/C SCO3 CO2 emission being higher better reflects the actual A/C performance over that of the proposed A/C Idle CO2 test. Furthermore, this proposal incorporates a scheme already in place in California and can address measurement concerns on HV and PHEV technology vehicles. However, Toyota has concerns whether the test vehicle selected for this type of testing (SC03+FTP) would be representative. If the selection of the A/C system test vehicle is based solely on the emission data vehicle, it is conceivable that the A/C test results might be compromised. To ensure representative testing and reduce testing burden, A/C test groups can be established by system configuration. [OAR-2009-0472-7291, pp.22-23]

This proposed idea would be less burdensome because it incorporates existing data so a new test would be unnecessary. Finally, using this approach would provide some incentive for manufacturers to improve the A/C system efficiency performance at the higher load conditions. [OAR-2009-0472-7291, p.23]

National Renewable Energy Laboratory

It is uncertain if A/C systems optimized for reduced A/C fuel use at idle (maximize GHG credit) will have an A/C fuel use reduction during real world driving. Figure 2-4 in the DRIA is plots data at idle. Is there corresponding data for A/C fuel use over the SCO3? In testing to support the proposed regulation, EPA encountered a good example of this situation (in the text at the bottom of page 2-34 of the DRIA). In this case, a manufacturer acknowledged that their A/C system has low fuel use and low cooling capacity at idle, but off-idle performed very well. Care needs to be exercised in developing this regulation to encourage A/C fuel use reduction during all phases of driving and not just at idle. [OAR-2009-0472-4798.1, p.1]

The proposed A/C fuel use idle test does not incorporate a thermal soak period with solar lamps. This provides no incentive for automobile manufacturers to reduce the thermal loads on the passenger compartment and realize GHG emission reductions beyond improved efficiency A/C equipment. A soak period with solar lamps is recommended. [OAR-2009-0472-4798.1, p.1]

One issue to consider is how to compare A/C systems with different cooldown rates. An automobile manufacturer might choose to incorporate a large A/C system to cool occupants quickly while another may choose a low power system that cools slowly. The fuel use during the cooldown for the large system would be high but the duration would be short. In the idle test, EPA is assuming 50% cooldown and 50% steady state A/C fuel use for vehicles with manual A/C control. In the SCO3 test option, it is assumed the first cycle measures cooldown A/C fuel use and the second cycle is steady state. Then the 2 results are averaged to obtain the A/C fuel

use. Both of these approaches assume the cooldown is accomplished during the first cycle and half of the A/C usage occurs during cooldown mode while the other half is steady state. It is recommended EPA assess the 50/50 weighting assumption and provide supporting information. An alternative is to calculate an average A/C fuel use by weighting the cooldown and steady state components based on vehicle and A/C use characteristics. A small A/C system would have a higher weighting for the cooldown since this mode of operation occurs more often than with a large A/C system. [OAR-2009-0472-4798.1, p.1]

California Air Resources Board

CARB believes EPA should develop and utilize a performance test to quantify AC indirect credit in the future. We support EPA's suggestion of a modified SC03 test procedure and not the idle test. The proposed AC Idle Test will not capture real world driving conditions because it lacks adequate engine load and speed variance. In the interim, a menu-driven option for assessing AC indirect emission may buy some time for test development.

Honeywell International, Inc.

Whenever feasible, EPA should utilize the best available testing procedures to measure the performance of A/C efficiency to quantify accurately the reduction of GHG emissions, and the resulting Efficiency Credits. By adopting testing procedures that incorporate the most up-to-date research and technical information underlying the performance of A/C Systems, the proposed credit programs can help meet the President's greenhouse gas emissions targets and provide integrity to the credit program. [OAR-2009-0472-7206.1, p.10]

European Automobile Manufacturers Association

Air conditioning Idle test

ACEA promotes a worldwide harmonized testing approach. The test does not cover the average condition. The set temperature of 66 (=75-9) °F is very low and seems not to be the average set point of the customers. We propose 71°F. [OAR-2009-0472-7444.1, p.2]

New York State Department of Environmental Conservation

We also believe that EPA should consider the development of an air conditioner incremental emissions certification test. EPA suggests modifying the SC03 test cycle from the Supplemental Federal Test Procedure (SFTP) for this purpose. We concur with EPA's view that the extreme test cell conditions of the current SC03 are inappropriate. We also believe that it is not necessary to simulate solar radiation, as is done in the SFTP. Simulating solar radiation, while it may make for a more 'real' load on the vehicle, would be a significant expense in an area where relatively small improvements (a maximum credit of < 6 grams per mile) are expected . We believe that this level of expense will result in an economic decision by manufacturers to not pursue these credits. [OAR-2009-0472-7454, pp.2-3]

Chu, Yuli

EPA Response to Comments

I support the collaboration effort between EPA, industry, the California Air Resources Board, and other stakeholders to move toward increasingly robust performance tests for A/C and may include such changes in this final rule. [OAR-2009-0472-7042.1, p.3]

EPA Response:

A/C Idle Test

Many commenters questioned the ability of the A/C Idle Test to measure the improved efficiency of certain A/C technologies, noting that the test would overestimate fuel consumption, and in general that the test was not representative of real-world driving conditions. However, although EPA acknowledges that this test directly simulates a relatively limited range of technologies and conditions, it accurately estimates A/C efficiency and performance under those conditions, and we believe that it is sufficiently robust for the screening purpose of demonstrating that the system design changes are indeed implemented properly and are resulting in improved efficiency of a vehicle's A/C system, at idle as well as under a limited range of operating conditions. Since idle is significant part of real world and FTP drive cycles (idle represents 18% of the FTP), EPA believes that the focus in this rulemaking on A/C system efficiency under idle conditions, as a screening measure, is justified. Moreover, we believe that a performance test is necessary to assure that efficiency-improving technologies are implemented properly and that the vehicle's A/C system operates in an efficient manner under idle conditions. The design of the A/C CO_2 Idle Test represents a balancing of the need for performance tests whenever possible to ensure the most accurate quantification of efficiency improvements, with practical concerns for testing burden and facility requirements. (Thus, EPA is not adopting the SCO3 test, which contains more drive cycles, but imposes significantly greater testing burden.) EPA believes that the Idle Test adds to the robust quantification of A/C credits that will result in real-world efficiency improvements and reductions in A/C-related CO_2 emissions. Use of the Idle Test as a pre-condition in order to generate A/C Efficiency Credits will not be required until MY 2014 to allow sufficient time for manufacturers to make the necessary facilities improvements and to gain experience with the test.

Adapting or Modifying Other Test Cycles to Measure Impact of A/C Loads

In the proposal, EPA invited comment on a more comprehensive testing approach to quantifying A/C CO_2 emissions – an approach that could be somewhat more technically robust, but would require more test time and test facility improvements for many manufacturers. EPA also invited comment on using an adapted version of the SCO3, test (an existing test procedure that is part of the Supplemental Federal Test Procedure). There were many comments opposed to this proposal, and very few supporters. Most of the comments opposing this approach echoed the concerns made by in the NPRM. These included excessive testing burden, limited test facilities and the cost of adding new ones, and the concern that the SC03 test may not be sufficiently representative of in use A/C usage. Some commenters supported a derivative of the SCO3 test or multiple runs of other urban cycles (such as the LA-4) for quantifying A/C system efficiency. While EPA considers a test cycle that covers a broader range of vehicle speed and climatic conditions to be ideal, developing such a representative A/C test would involve the work of

many stakeholders, and would require a significant amount of time, exceeding the scope of this rule.

Working to Develop an Improved A/C Test Procedure

EPA expects to continue working with industry, the California Air Resources Board, and other stakeholders to move toward increasingly robust performance tests and methods for determining the efficiency of mobile A/C systems and the related impact on vehicle CO_2 emissions, including a potential adapted SC03 test.

5.7.2. Flex Fuel and Alternative Fuel Vehicle Credits

Organization: Environmental Defense Fund
Hyundai Motor Company
Toyota Motor North America
Public Citizen and Safe Climate Campaign
Union of Concerned Scientists
Natural Resources Defense Council
American Petroleum Institute
Sierra Club
United Auto Workers
California Air Resources Board
National Automobile Dealers Association (NADA)
State of New Jersey
Cummins Inc.
New York State Department of Environmental Conservation
Washington State Department of Commerce
Chew, Yuli

Comment:

Environmental Defense Fund

In terms of flexible fuel vehicles, I think it would be safe to say that we prefer the California approach, which is you don't get any credit without demonstrating actual use, but, on the other hand, we recognize that NHTSA is under its own rules and so on under some obligation to give some kind of credit, so I think what EPA is proposing for its own program makes sense, at least we're willing to support it, where there is some kind of a credit, but that credit will be phased out and will be phased out entirely by 2016 absent an actual showing, and then you also ask a question about, well, how could the manufacturers demonstrate use, and I think you identify the two principal ways of doing it, one is a national calculation, the number of cars out there, the total amount of ethanol or biofuels of some sort being used by vehicles and you sort of allocate those across the board. Another is to use the onboard computer. I mean, and my understanding is that the onboard computer in a flex fuel vehicle has to know which fuel is being burned when because the engine may operate a little bit differently depending on which fuel, whether it's an

ethanol or biofuel or gasoline, so it should be possible. And, again, there was testimony during the Vermont Pavley trial about this to adjust that to store information about actual fuel use that could be downloaded during inspection times or otherwise. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 120-121.]

Hyundai Motor Company

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.67-72]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 81.]

We also believe that the CAFE flexible fuel credit calculation overstates the current real-world use of alternative fuels. However, we understand that this is a calculation prescribed by statute.

Toyota Motor North America

EPA proposes adopting a flexible fuel vehicle (FFV) credit mirroring NHTSA's FFV credit, through 2015 model year. After 2015 model year, EPA proposes that FFV credits could be earned to the extent manufacturers could demonstrate use of ethanol in FFVs. [OAR-2009-0472-7291, p.23]

Toyota supports EPA's adoption of the FFV credit for producing flexible fuel vehicles (FFVs) through 2015 model year. Because actions taken by manufacturers to comply with EPA's regulation will, to a large extent, be the same as those taken to comply with NHTSA's CAFE regulation, it is appropriate for EPA to consider flexibilities contained in the CAFE program that clearly impact product plans and technology deployment plans already in place or nearly in place. Adopting the FFV credit for a transitional period of time appears to recognize this reality, while providing a pathway to eventually phase-out the flexibility. [OAR-2009-0472-7291, p.23]

For post-2015 model year, EPA proposes to continue to allow a manufacturer to earn the FFV credit if the manufacturer can demonstrate use of ethanol in FFVs. Toyota does not oppose this demonstration, but suggests that such credit should only be allowed with a demonstration of low life-cycle carbon ethanol usage. As EPA's objective is reduction of GHGs, simply replacing gasoline with ethanol of the same or similar GHG life-cycle impact does not further this objective. Notwithstanding the above comments, Toyota is highly uncertain whether an appropriate and robust demonstration of low life-cycle carbon fuel usage can be made for the purposes of generating GHG credits. Substantial challenges are likely to be encountered due to the uncertainty of fueling pattern for in-use vehicles, and the difficulty in retroactively adjusting credits earned in a model year based on evidence of improper fuel use later in the lifetime of the vehicle. Regrettably, Toyota is not sure these concerns can be adequately addressed by EPA or any other entity at this time. [OAR-2009-0472-7291, p.23]

Public Citizen and Safe Climate Campaign

The flex fuel vehicle (FFV) credit is an unjustifiable loophole that has allowed manufacturers to evade up to 1.2 mpg of fuel economy obligation for building vehicles that are capable of running on (but do not actually have to use) a blend of 85 percent ethanol (E85). EISA extended the FFV credits through 2019, although the value of the credit phases out beginning in 2014. EPA proposes to apply the FFV credit consistent with NHTSA's standards through 2015; after that date, the credit would be based on actual use of E85. We acknowledge that the credit provided in NHTSA's fuel economy program is a legislatively mandated extension of an existing program. [OAR-2009-0472-7050.1, p.7]

The FFV credit, offered since the 1988 Alternative Motor Fuels Act (AMFA) was enacted, and extended multiple times, has not worked. Its original intent was to encourage ethanol infrastructure, but it did not. The 2002 NAS study on the fuel economy program estimated that FFVs ran on ethanol less than one percent of the time, and recommended that the FFV credit program be abolished. [OAR-2009-0472-7050.1, p.7]

A sharp uptick in availability of ethanol blended fuel and refueling infrastructure (which is still a minimal fraction of the total refueling infrastructure) occurred only after the Energy Policy Act of 2005 (EPAct 2005) mandated the production of a certain volume of ethanol. Then in 2004, California and several other states switched from methyl tert-butyl ether (MTBE) to ethanol to meet oxygenate requirements for summer blend gasoline, which increased demand for 10 percent ethanol (E10). The mandated volume of ethanol was increased and expanded in EISA, to rise to 36 billion gallons by 2022. [OAR-2009-0472-7050.1, pp.7-8]

The AMFA credit is limited, which effectively caps the number of vehicles it can encourage each manufacturer to build, limiting the usefulness of the credit. AMFA credits have not had a meaningful impact on E85 consumption. Ethanol producers, unable to increase the market penetration of ethanol without increasing the blending percentage of ethanol in gasoline for wide consumption, have begun to press that policy. [OAR-2009-0472-7050.1, p.8]

EPA raises the option of capping the FFV credits based on vehicle size instead of using the limitation contained in the CAFE program. We strongly urge EPA not adopt this basis for setting the FFV credit. The credit has already been shown to have little value in increasing the market penetration of ethanol, and setting the credit on an attribute basis for the greenhouse gas program will do nothing to improve its effectiveness. [OAR-2009-0472-7050.1, p.8]

Public Citizen has long supported predicating the fuel economy credit for FFVs on actual consumption of E85, something EPA proposes to do in model years 2015 and after. EPA's recent proposal on its revised Renewable Fuel Standard (RFS2) illustrates the fact that it is difficult to measure the greenhouse gas emissions from ethanol. The agency has not stated how it will estimate the greenhouse gas emissions from ethanol in E85, or whether there will be different values for different feedstocks and production methods of ethanol. We urge that EPA devise a way to weight the greenhouse gas emissions from ethanol based on the values for different feedstocks and production methods, consistent with what it has done for RFS2. [OAR-2009-0472-7050.1, p.8]

Union of Concerned Scientists

EPA Response to Comments

UCS has long opposed the industry's use of flex fuel vehicle (FFV) credits to lower fuel economy obligations given the facts that the credits are overly generous and very few vehicles outfitted with FFV technology are regularly operated on E85. We applaud EPA for their proposal to phase this loophole out by model year 2016 and require that any post-model year 2015 credits accrued under the program be based on actual E85 use rather than vehicle capability. The loophole created by these credits has eroded oil savings and pollution reductions for more than a decade and, while it is currently set to phase out by 2020 under EPCA, this is not guaranteed; historically, FFV credits have seen multiple extensions beyond their originally prescribed duration. If the FFV program were to continue in its current state, it would likely erode the 2016 fleet average between 0.5 and 0.8 mpg-equivalent, depending on the extent of the credit's use. [OAR-2009-0472-7181.1, p.12]

UCS strongly urges that EPA follow through with its proposed handling of FFV credits for model years 2016 and beyond, without modification. [OAR-2009-0472-7181.1, p.12]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.103-113]

Finally, flex-fuel vehicle credits must be terminated. Currently EPA standards allow automakers to use flex-fuel vehicle credits to achieve compliance in the early years of the program. Historically automakers have used FFV credits to lower their fuel economy obligations despite the fact that very few of the vehicles were ever run on these alternative fuels, such as E85.

Beginning in model year 2016, EPA proposes that any FFV credits accrued under its program be based on actual E85 use as opposed to just vehicle capability. This change would close the FFV loophole and finally make the federal program consistent with California's.

This loophole created by these credits has eroded oil savings and pollution reductions for decades. It is critical that the EPA follow through with its modification of these credits, FFV credits, in 2016. If the FFV program were to continue in its current state, it would erode the 2016 proposed fleet standard.

Natural Resources Defense Council

Credits generated through sales of flex fuel vehicles (FFVs) and the advanced technology multiplier do not represent actual GHG reductions. Therefore, we recommend that manufactures be barred from banking, transferring or trading these credits to ensure they do not undermine the environmental and technology-forcing goals of the GHG standards. [OAR-2009-0472-7141.1, p. 10]

Flex-Fuel Vehicle Credits Should Be Phased Out No Later than 2015
NRDC strongly supports EPA's proposal to fully phase out flex-fuel vehicle (FFV) credits by MY 2015. While EPCA authorized FFV credits under the CAFE program to promote alternative fuel use, the government's own reports have concluded that FFVs are typically fueled by petroleum, not an alternative fuel. Furthermore, the CAFE credit has allowed manufacturers to sell vehicles that have lower fuel economy than would be required without the credit and therefore increase petroleum consumption and increase greenhouse gas emissions. For these

reasons, EPA should phase out current FFV credits as soon as possible and no later than MY 2015. [OAR-2009-0472-7141.1, p. 19]

NRDC agrees with EPA's proposal to only allow FFV credits beyond MY 2015 if it can be demonstrated in an enforceable manner that the FFVs are consuming significant volumes of alternative fuel beyond that existing in low-level blends of gasoline and diesel. The level of eligible credits should be based on the amount of alternative fuel used and the full fuel cycle emissions impacts of that fuel. For non-petroleum fuels, emissions during fuel production must be included since their full fuel cycle carbon pollution change compared to petroleum fuels is largely based on the emissions that occur during the alternative fuel production (e.g. the use of cellulosic biofuels in internal combustion engine vehicles can result in lower carbon pollution than petroleum due to carbon absorption during the feedstock growing process). [OAR-2009-0472-7141.1, p. 19]

American Petroleum Institute

Flexible Fuel Vehicle Credits: In Section III (C)(2)(b), EPA proposes that emissions standards for Flexible Fuel Vehicles (FFVs) be based on their actual carbon dioxide emissions in 2016 and later. The manufacturer would also be required to demonstrate that the alternative fuels are actually being used in the vehicles. EPA considers two methods for compliance, a top down approach based on aggregate data from the Department of Energy's Energy Information Administration, or a survey program based on data recorded in on-board systems and transmitted back to the manufacturer. The NPRM does not dictate the details on the second option, but requires that the program be based on sound statistical methodology. API supports the concept of basing fuel emissions standards on actual emissions, but questions the delay until 2016. The DOE EIA top down data approach to compliance does not necessitate any equipment changes and can be implemented much sooner than 2016. Fuel economy credits for FFV production were originally designed to stimulate ethanol production. The Renewable Fuel Standard requires 36 billion gallons of ethanol per year by 2022 and far exceeds any ethanol market stimulation created by FFV manufacturing. The NPRM proposes to continue a program of FFV credits until 2016. This program should be eliminated within a much shorter time frame.[OAR-2009-0472-7143.1, p.11]

Dedicated Alternative Fuel Vehicles: Fuel economy calculations for dedicated alternative fuel vehicles should be based on a sound scientific approach, not a policy approach. API requests that EPA remove the multiplier and establish a method of determining the actual GHG impact from dedicated alternative fuel vehicles.[OAR-2009-0472-7143.1, p.12]

Sierra Club

We welcome EPA's decision to exclude FFV credits in 2016 – one of the transitional aspects of this proposal. FFV credits under the CAFE system have long been recognized as flawed, leading to increased oil consumption. While NHTSA is bound by EISA to phase out FFV credits by 2019, EPA's action is a much needed shift away from credits that, in reality, have undermined the oil savings from the fuel economy program. [OAR-2009-0472-7278.1, p.16]

EPA proposes to shift to awarding FFV credits in 2016 and beyond to actual use of E-85. Recent scientific reports have concluded that on a lifecycle basis, corn ethanol may in fact increase greenhouse emissions. We would urge EPA to consider not giving credits for E-85 consumption. Fuel volumes are mandated under RFS2 and the fuel is otherwise subsidized through other policies. The cost to automakers to produce FFVs is nominal and need not be incentivized through vehicle program with the potential cost of increased greenhouse gas emission. In testimony at the Renewable Fuel Standard hearing on June 9th, 2009, Sierra Club urged the administration to consider emissions from the transportation sector as a whole– getting standards for vehicles and fuels right as well as reducing how much we drive. As the fuel mix in the US diversifies with more biofuels and unfortunately more Canadian tar sands and other dirty fuels, the impact of emissions from these non-conventional fuels on the transportation sector, on a lifecycle basis, must be accounted for to ensure we do not erode the reductions promised from these standards. We urge that EPA use a realistic greenhouse gas factor for E-85 in determining the credits for use of the fuel. EPA should provide this factor for corn ethanol grandfathered under EISA. [OAR-2009-0472-7278.1, p.16]

EPA's Clean Air Act authority is consistent with a full lifecycle accounting of fuels and should be used to ensure that a consistent and correct GHG metric is established that also avoids unintended consequences. Given the controversy that has surrounded FFV credits, we urge EPA to set clear guidelines for E-85 in the vehicle program context. [OAR-2009-0472-7278.1, p.16]

United Auto Workers

The UAW also supports the agencies proposals on flex-fuel and alternative-fuel vehicle credits. We believe that sufficient quantities of alternative fuels will be available and in use to make these credits useful after 2015 in the EPA's program. The proposed rule also correctly applies the statutory intent regarding the application of these credits under the CAFE regulations. [OAR-2009-0472-7056.1, p.3]

California Air Resources Board

In addition to the non-zero grams/mile ZEV upstream factor discussed earlier, we have the following comments on other aspects of the proposed crediting system. EPA has proposed credit provisions designed to provide manufacturers with compliance flexibility, help ease the transition into the national GHG program, and provide incentives for the development and production of advanced GHG technologies. Consistent with the Low-Emission Vehicle and Zero-Emission Vehicle programs for light-duty vehicles, CARB includes similar provisions in its GHG program and is generally supportive of including such provisions in the national GHG program. However, while we agree that including credit mechanisms in the national GHG program is appropriate, we believe that such provisions should not undercut the primary objective of the program, namely achieving significant reductions of GHG emissions from light-duty vehicles.

EPA requested comment on its proposed FFV crediting. CARB recognizes that FFV credits without a specific demonstration of alternative fuel usage are included in EPA's GHG program for model years 2012-2015 in consideration of manufacturers' lead time requirements. While

CARB does not believe that such credits are necessary, or even appropriate for a GHG program, we are pleased that EPA will base these credits on verifiable alternative fuel usage beginning in 2016. We also agree with EPA that such credits should not be available in model years 2009-2011. [OAR-2009-0472-7189.1, p.12]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

National Automobile Dealers Association (NADA)

Under EISA, flex fuel credits are available until MY 2019 for automakers using such technology. EPA proposes to phase out this credit in MY 2015. To be "consistent and harmonized," EPA should adopt the policy Congress has and not one CARB favors. [OAR-2009-0472-7182.1, p.8]

State of New Jersey

[State of New Jersey also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 115-117.]

Flexible Fueled Vehicle (FFV) program and its associated credits: We support the proposal to only allow FFV credits if they are based on a manufacturer's demonstration that the alternative fuel is actually being used in the vehicles. This approach will ensure that these emission reduction credits are based upon real and verifiable reductions. The Department also supports the USEPA's statement that the ability to generate credits upon a demonstration of usage of the alternative fuel will provide an actual incentive to see that such fuels are used. However, we stress that the use of credits for FFVs should be allowed only if the credits are based on actual CO_2 emission reductions (both fuel usage and emission rates). Therefore, in crafting the requirements for that demonstration, we support following a method that is the same or similar to the California Air Resources Board's method of verification through either: 1) scientific sampling and survey; or 2) the service data when the vehicles are brought back for servicing at their dealership. [OAR-2009-0472-7109.1, p.4]

Cummins Inc.

Cummins supports EPA's proposal to provide CO_2 credits for Flexible Fueled Vehicles (FFV) corresponding to the amount allowed by the amended Energy Policy and Conservation Act (EPCA). However, EPA is proposing these credits only for 2012-2015 model years (MYs). To keep as much consistency as possible with the CAFE program, we urge EPA to extend the FFV credit availability until MY 2019 (same as CAFE). [OAR-2009-0472-7205.1, p.4]

Starting in MY 2016, EPA is proposing to remove the 0.15 "volumetric conversion factor" in CO_2 emissions calculations for FFVs and also require manufacturers to demonstrate that the actual fuel is being used in their vehicles. As mentioned earlier, Cummins believes that EPA should adopt a holistic view of life-cycle analysis to determine CO_2 benefits of alternative fuels like ethanol and bio-diesel. The life-cycle analysis could then be used to determine a 'credit' based on CO_2 reductions compared to a conventional (gasoline or diesel) vehicle, which a

manufacturer would be able to claim based on the number of such vehicles produced and by demonstrating the actual use of bio-fuel. Such 'credit' is necessary to recognize the true CO_2 benefits of such low carbon intensity bio-fuels and encourage their use by providing a level playing field with other CO_2-reducing technologies employed on the vehicles. [OAR-2009-0472-7205.1, p.4]

New York State Department of Environmental Conservation

Flexible Fuel Vehicles (FFVs) and Alternative Fuel Vehicle Credits (Preamble Section III.C.2) We support EPA's intention to eliminate the arbitrary, unscientific, and unsupportable, 0.15 emissions multiplier from the tailpipe greenhouse gas emissions calculation for FFVs and alternative fueled vehicles beginning with the 2016 model year. We would prefer its immediate elimination. We also support EPA's requirement that manufacturers demonstrate that alternative fuel is actually used before including the alternative fuel CO_2 emissions in the calculation of the FFV's overall certification emissions. Again we favor implementing this provision with the 2012 model year, rather than waiting until the 2016 model year. [OAR-2009-0472-7454, p.3]

Washington State Department of Commerce

[Following comments are from LA Testimony, OAR-2009-0472-7283, p.126]

We support allowing for reasonable credits for flex-fuel vehicles only based on demonstration that these vehicles are running on alternative fuel. We intend to submit separate documentation with some ideas on how this demonstration could be achieved.

Chew, Yuli

After MY 2015, I support EPA's proposal to allow FFV credits only based on a manufacturer's demonstration that the alternative fuel is actually being used in the vehicles. I support following CARB's method of verification either through: 1) scientific sampling and survey; or 2) through the service data when the vehicles are brought back to service in their dealership. The alternative fuel usage percentage data are captured as part of OBDII criteria. [OAR-2009-0472-7042.1, p.1]

I am concerned about too much "windfall" credits from the trucks. FFV credits can only be obtained as what alternative fuels are being used in CARB's Regulation. I support the credits be revised after 2016 based on the actual environmental impacts for the useful life of the vehicles.[OAR-2009-0472-7042.1, p.3]

I welcome EPA develop a mechanism based on the same treatment of alternative fuel use by CARB, either through scientific surveys or data recorded in the actual OBDII data. The credits should be based on the actual usage and the amount of greenhouse gas saved on a lifetime well-to-wheel analysis approach without the FFV credits. [OAR-2009-0472-7042.1, pp.3-4]

I welcome EPA's real-world reductions approach for alternative fuel vehicles. I would also suggest to limit the percentage of credits from trucks that can be used to normalize the debits for

the cars, or diminish the value of the credits from trucks that can be carryforward, e.g. decrease 20% of the worth over the next model year. [OAR-2009-0472-7042.1, p.4]

EPA Response:

For the GHG program, EPA is allowing FFV credits corresponding to the amounts allowed by the amended EPCA but only during the period from MYs 2012 to 2015. EPA received comments supporting and opposing its approach for MY2012-2015 FFV credits. Several commenters, while not favoring EPA's approach for MY 2012-2015, focused their comments on supporting EPA's approach for MY 2016 and later. EPA continues to believe that several manufacturers have already taken the availability of FFV credits into account in their near-term future planning for CAFE and this justified reliance indicates that these credits need to be considered in assessing necessary lead time for the CO_2 standards. A number of manufacturers in fact commented that EPA's credits programs are necessary in allowing them to transition to the new standards. EPA thus believes that allowing these credits, in the near term, is needed to provide adequate lead time for manufacturers to implement the new multi-year GHG standards, but that for the longer term there is adequate lead time without the use of such credits.

As proposed, for MY 2016 and later manufacturers will need to consider actual vehicle performance in assessing whether credits would be generated, and in doing so reliably estimate the extent to which the alternative fuel is actually being used by vehicles in order to count the alternative fuel use in the vehicle's CO_2 emissions level determination. Beginning in MY2016, the FFV credits as described above for MY2012-2015 (including the 0.15 factor and the assumption for 50% alternative fuel/50% gasoline used) will no longer be available for EPA's GHG program. Rather, GHG compliance values will be based on actual emissions performance of the FFV on conventional and alternative fuels, weighted by the actual use of these fuels in the FFVs.

Starting with model year 2016, as proposed, EPA thus will no longer allow manufacturers to base FFV emissions on the use of the 0.15 factor credit, and on the use of an assumed 50% usage of alternative fuel. Instead, EPA believes the appropriate approach is to ensure that FFV emissions are based on demonstrated emissions performance. This will promote the environmental goals of the final program. EPA received several comments supporting its proposal to use this approach for MY2016 and later instead of the EPCA approach. Under the EPA program in MY2016 and later, manufacturers will be allowed to base an FFV's emissions compliance value in part on the vehicle test values run on the alternative fuel, for that portion of its fleet for which the manufacturer demonstrates utilized the alternative fuel in the field. Without this demonstration, the default rule is to assume FFVs operate on 100% gasoline, and the emissions value for the FFV vehicle will be based on the vehicle's tested value on gasoline. However, if a manufacturer can demonstrate that a portion of its FFVs are using an alternative fuel in use, then the FFV emissions compliance value can be calculated based on the vehicle's tested value using the alternative fuel, prorated based on the percentage of the fleet using the alternative fuel in the field. EPA believes this approach will provide an actual incentive to ensure that such fuels are used. The incentive arises since actual use of the flexible fuel typically results in lower tailpipe GHG emissions than use of gasoline and hence improves the vehicles' performance, making it more likely that its performance will improve a manufacturers' average

fleetwide performance. Based on existing certification data, E85 FFV CO_2 emissions are typically on average about 5 percent lower on E85 than CO_2 emissions on 100 percent gasoline. Moreover, currently there is little incentive to optimize CO_2 performance for vehicles when running on E85. EPA believes the above approach provides such an incentive to manufacturers and that E85 vehicles could be optimized through engine redesign and calibration to provide additional CO_2 reductions.

This approach will promote greater use of alternative fuels, as compared to a situation where there is no usage requirement. This is also consistent with EPA's overall commitment to the expanded use of renewable fuels under the rules implementing section 211 of the Act. Therefore, for these additional reasons, EPA is basing the FFV program for MYs 2016 and thereafter on real-world reductions: i.e., actual vehicle CO_2 emissions levels based on actual use of the two fuels, without the 0.15 conversion factor specified under EISA.

EPA received a few comments that the credits based on the EPCA methodology should be allowed through MY2019, as they are in the CAFE program. As noted above, EPA included FFV credits based on the EPCA methodology for the early years of the program because some manufacturers have already incorporated the credits into their near-term product plans and to not allow them could be very disruptive. As part of providing needed lead time, EPA believes it is appropriate not to undermine this legitimate reliance by manufacturers and so to allow FFV credits based on the EPCA methodology for a limited, needed period. By MY 2016, manufacturers will have sufficient time to plan to meet standards without generating further FFV credits based on the EPCA methodology. EPA believes it is important to transition to a methodology that bases FFV emissions values on the actual use of the fuel and the actual emissions of the vehicle when operated on the fuel. Unlike EPCA, CAA section 202(a) (1) does not mandate that EPA treat FFVs in a specific way. Instead EPA is required to exercise its own judgment and determine an appropriate approach that best promotes the technology-based, emission reduction goals of this CAA section. Under these circumstances, EPA will treat FFVs for model years 2012-2015 the same as under EPCA, as part of providing sufficient lead time given manufacturers' compliance strategies which rely on the existence of these EPCA statutory credits, as explained above. Several commenters supported EPA's proposed approach for MY2016 and later.

EPA received comments that EPA should restrict banking, transferring or trading MY2012-2015 credits because the credits do not represent actual GHG reductions. EPA did not propose or request comment on such restrictions and has not adopted any credit restrictions for FFV credits. EPA believes that retention of such banking, transferring and trading of credits is needed through MY 2015 for the same reason that the credits themselves need to be retained. Manufacturers have indicated reasonably that these strategies incorporating such credits are already part of their compliance strategies, and that they cannot readily change course. Thus, in order to provide needed lead time in the first program model years, EPA is not altering banking, trading, and transferring of these credits.

Sierra Club submitted comments urging EPA to consider not giving credits for E-85 consumption for MY2016 and later. Sierra Club commented "fuel volumes are mandated under RFS2 and the fuel is otherwise subsidized through other policies. The cost to automakers to

produce FFVs is nominal and need not be incentivized through vehicle program with the potential cost of increased greenhouse gas emission." As noted above, GHG compliance values will be based on actual emissions performance of the FFV on conventional and alternative fuels, weighted by the actual use of these fuels in the FFVs. The only "credit" available to manufacturers is through their optimization of the FFV's emissions performance on the alternative fuel and the real-world use of the fuel.

Comments regarding the use of life-cycle emissions in FFV credits calculations are addressed below. Comments regarding FFV credits caps for MY2012-2015 are also addressed below.

Natural Gas Vehicle Comments

Organization: NGVAmerica
Clean Energy Fuels

Comment:

NGVAmerica

NGVAmerica supports EPA's plan to provide CO_2 credits to manufacturers of alternative fueled vehicles based on the credit mechanism currently provided for such vehicles under the fuel economy regulations. The fuel economy regulations use a factor of 0.15 for alternative fuel vehicles. Under EPA's proposal, this same factor would be used to reduce the greenhouse gas emissions output of alternative fuel vehicles, thus enhancing the potential credits that such vehicles could earn. The proposed GHG regulations would provide the enhanced credits for 2012 – 2015 after which time they would no longer be provided for flex-fueled or dual-fueled alternative fuel vehicles. In fact, starting in 2016, EPA only take into account the emission benefits of flex-fueled or dual-fueled alternative fuel vehicles if the manufacturer can verify or appropriately estimate the level of alternative fuel utilization in its alternative fuel vehicles. Dedicated alternative fueled vehicles, however, would be assumed to operate on alternative fuel since they can only operate on one fuel. Thus, dedicated vehicles would continue to earn credits based on their use of alternative fuel but they would no longer benefit from the enhanced credits provided in years 2012 – 2015. [OAR-2009-0472-7236.1, p.9]

We support EPA's proposed enhanced credits for 2012 - 2015 but note that these credits do not apply to the caps imposed on CH_4 and N_2O emissions. As we understand the current proposal, the enhanced credits only apply with respect to CO_2 emissions. Thus, the cap on methane emissions, unless changed, would still be a burden on manufacturers and potentially limit the introduction of some NGVs. Assuming our concerns regarding the caps are addressed, we believe the credit program and the added incentive provided for alternative fuel vehicles could encourage manufacturers to increase their NGV offerings. If EPA adopts a CO_2-equivalent approach for all vehicles, the enhanced greenhouse gas emission credits for alternative fuel vehicles should be based on the average of the three pollutants multiplied by 0.15. If EPA as an alternative only provides a CO_2-equivalent approach for NGVs and other alternative fuel

vehicles, we advocate that the factor of 0.15 be applied only against the CO_2 emissions of NGVs for purposes of the greenhouse gas credit program. [OAR-2009-0472-7236.1, p.9]

NGVAmerica also believes the proposal regarding alternative fuel vehicles should be expanded. As proposed, the credit program would not provide enhanced incentives for manufacturers of NGVs after 2015, and there are no early credits for such vehicles. EPA's proposal, however, would provide incentives for electric vehicles and other advanced technology vehicles until 2016; it also would provide early credits for such vehicles beginning in 2009. In addition, the credits for advanced technology vehicles are structured differently than those for alternative fuel vehicles, potentially making them more valuable. The credits assume that electric vehicles replace comparable gasoline powered vehicles and operate on electricity. The credit mechanism magnifies the benefits of these vehicles by multiplying each produced vehicle by 1.2 – 2.0, so that it appears that a manufacturer has produced a larger number of such vehicles for purposes of averaging CO_2 emissions. [OAR-2009-0472-7236.1, p.10]

Providing the credits proposed for advanced technology vehicles while not also providing similar credits for NGVs is inherently unfair since it is not at all clear that such vehicles will provide real-world benefits that are superior to NGVs or even gasoline vehicles when full-fuel cycle emissions are considered. As the NAS report indicates, it is not clear that electric and plug-in electric vehicles will provide any benefits over higher fuel-efficiency gasoline vehicles. Given these factors, we urge EPA to provide the following additional incentives for dedicated and dual-fuel NGVs: 1) provide early credits for dedicated vehicles going back to MY 2009 as proposed for other vehicles, and 2) extend the enhanced credits using the 0.15 conversion factor for two additional model years (2016 – 2017) for manufacturers of dedicated and bi-fuel vehicles capable of demonstrating that the vehicles operate a majority of the time on alternative fuel. [OAR-2009-0472-7236.1, p.10]

The current proposal provides enhanced credits for alternative fuel vehicles without any showing that such vehicles operate on alternative fuels. These credits are available until 2015 after which time enhanced credits are no longer provided and alternative fuel use is only taken into account if the manufacturer can demonstrate the alternative fuel is used. We believe an added incentive for dedicated vehicles and dual-fuel vehicles that actually use alternative fuel is warranted as a way of encouraging manufacturers to increase their offerings of dedicated vehicles and in order that they would take a stronger interest in ensuring that the vehicles they make actually operate on alternative fuels. Under our proposal, manufacturers of all dedicated vehicles and dual-fuel vehicles which are demonstrated to operate more than 50 percent of the time on alternative fuel would continue to receive enhanced credits for such vehicles in model years 2016 and 2017. [OAR-2009-0472-7236.1, pp.10-11]

Clean Energy Fuels

Clean Energy supports EPA's plan to provide CO_2 credits to manufacturers of alternative fueled vehicles based on the credit mechanism currently provided for such vehicles under the fuel economy regulations. The fuel economy regulations use a multiplier of 0.15 to factor the fuel economy of alternative fuel vehicles. This same factor would be used to reduce the GHG emissions output of alternative fuel vehicles, thus enhancing the potential credits that such

vehicles could earn. The proposed GHG regulations would provide the enhanced credits for 2012 - 2015 after which time they would no longer be provided for FFVs or dual-fueled alternative fuel vehicles. In fact, starting in 2016, EPA would no longer take into account the emission benefits of FFVs or dual-fueled alternative fuel vehicles unless the manufacturer can verify or appropriately estimate the level of alternative fuel utilization in its alternative fuel vehicles. Dedicated alternative fueled vehicles, however, would be assumed to operate on alternative fuel since they can only operate on one fuel. Thus, dedicated vehicles would continue to earn credits based on their use of alternative fuel but they would no longer benefit from the enhanced credits provided in years 2012 - 2015. [OAR-2009-0472-7220.1, p.8]

We support EPA's providing the proposed enhanced credits for 2012 - 2015 but note that these credits do not apply to the caps imposed on CH_4 and N_2O emissions. As we understand the current proposal, the enhanced credits only apply with respect to CO_2 emissions. Thus, the cap on methane emissions, unless changed, would still be a burden on manufacturers and potentially limit the introduction of some NGVs. Assuming our concerns regarding the caps are addressed, we believe the credit program and the added incentive provide for alternative fuel vehicles could encourage manufacturers to increase their NGV offerings. If EPA and NHTSA adopt a CO_2e approach for all vehicles, the enhanced GHG emission credits for alternative fuel vehicles should be based on the average of the three pollutants multiplied by 0.15. If EPA and NHTSA as an alternative only provides a CO_2e approach for NGVs and other alternative fuel vehicles, we then would advocate that the factor of 0.15 be applied only against the CO_2 emissions of NGVs for purposes of the GHG credit program. [OAR-2009-0472-7220.1, p.8]

Clean Energy also believes the proposal regarding alternative fuel vehicles should be expanded. As proposed, the credit program would not provide enhanced incentives for manufacturers of NGVs after 2015, and there are no early credits for such vehicles. EPA's and NHTSA's proposal, however, would provide incentives for electric vehicles and other advanced technology vehicles until 2016; it also would provide early credits for such vehicles beginning in 2009. In addition, the credits for advanced technology vehicles are structured differently than those for alternative fuel vehicles, potentially making them more valuable. The credits assume that electric vehicles replace comparable gasoline powered vehicles and operate on electricity. The credit mechanism magnifies the benefits of these vehicles by multiplying each produced vehicle by 1.2 - 2.0, so that it appears that a manufacturer has produced a larger number of such vehicles for purposes of averaging CO_2 emissions. [OAR-2009-0472-7220.1, pp.8-9]

Providing the credits proposed for advanced technology vehicles while not also providing similar credits for NGVs is inherently unfair since it is not at all clear that such vehicles will provide real-world benefits that are superior to NGVs or even gasoline vehicles when full-fuel cycle emissions are considered. As the NAS report indicates, it is not clear that electric and plug-in electric vehicles will provide any benefits over higher fuel-efficiency gasoline vehicles. Given these factors, we urge EPA to provide the following additional incentives for dedicated and dual-fuel NGVs: 1) provide early credits for dedicated vehicles going back to MY 2009 as proposed for other vehicles, and 2) extend the enhanced credits using the 0.15 conversion factor for two additional model years (2016 - 2017) for manufacturers of dedicated and bi-fuel vehicles capable of demonstrating that the vehicles operate a majority of the time on alternative fuel. [OAR-2009-0472-7220.1, p.9]

EPA Response to Comments

The current proposal provides enhanced credits for alternative fuel vehicles without any showing that such vehicles operate on alternative fuels. These credits are available until 2015 after which time enhanced credits they are no longer provided and alternative fuel use in only taken into account if the manufacturer can demonstrate the alternative fuel is used. We believe an added incentive for dedicated vehicles and dual-fuel vehicles that actually use alternative fuel is warranted as a way of encouraging manufacturers to increase their offerings of dedicated vehicles and in order that they would take a stronger interest in ensuring that the vehicles they make actually operate on alternative fuels. Under our proposal, manufacturers of all dedicated vehicles and dual-fuel vehicles which are demonstrated to operate more than 50 percent of the time on alternative fuel would continue to receive enhanced credits for such vehicles in model years 2016 and 2017. [OAR-2009-0472-7220.1, p.9]

[[Clean Energy also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 139-140.]]

EPA Response:

The commenters are requesting additional credits for natural gas vehicles, and suggest extending the use of the 0.15 factor discussed above for MY2012-2015, to additional model years. EPA is retaining the use of the 0.15 factor for FFVs, dual-fuel vehicles, and alternative fuel vehicles through MY 2015 as proposed. Natural gas vehicles will be eligible for these credits. As described above, EPA is not extending the use of the 0.15 factor beyond MY2015. EPA did not expand the advanced technology vehicle credits to cover other technologies beyond PHEVs, EVs, and fuel cell vehicles for reasons described in Section 5.7.3 of this RTC and Section III.C.3 of the preamble to the final rule. EPA also does not believe that it would be appropriate to create a unique credit opportunity for natural gas vehicles by extending the use of the 0.15 factor for natural gas vehicles beyond the MYs 2012-2016. Several commenters strongly supported EPA moving away from using this factor as soon as possible because the factor is not based on actual emissions reductions.

The commenter also raises an issue regarding the interplay between standards for N_2O and CH_4 and credit generating opportunities if compliance is measured on a CO_2-equivalent basis. As discussed in Section 5.5 and Section III.B.7. of the preamble to the final rule, EPA is allowing manufacturers to comply with N_2O and CH_4 standards on a CO_2 equivalent basis. The commenter states that "if EPA adopts a CO_2-equivalent approach for all vehicles, the enhanced greenhouse gas emission credits for alternative fuel vehicles should be based on the average of the three pollutants multiplied by 0.15." EPA believes the commenter meant the sum rather than the average of the three pollutants. In response, manufacturers must apply the 0.15 factor to only the CO_2 emissions value and not to the N_2O and CH_4 CO_2-equivalent values when summing the emissions under the FFV credits provisions. Applying the 0.15 factor to CH_4 and N_2O emissions under the CO_2 equivalent approach (thereby reducing the emissions values by 85 percent) would provide the manufacturer with credits not envisioned in the proposal and not included in the CAFE program, and would result in the loss of feasible, cost-effective emissions reductions. Moreover, any credits under this rule for N20 or CH4 reductions are not justified, since the standards themselves are no-backsliding caps, and credits should only be earned for performance

which surpasses some benchmark representing good performance. See Section III.B.7 to the preamble to the final rule. Although EPA is not extending the use of the 0.15 factor to model years other than 2012-2016, natural gas vehicle manufacturers are eligible to earn early credits if they meet the requirements of the early credits program being adopted.

Biofuels Life-cycle Emissions Comments

Organization: Georgia-Pacific (GP)
American Forest and Paper Association (AF&PA)
Dinter, Bridget
Schade, Michael

Comment:

Georgia-Pacific (GP)

Tailpipe Emission Standards Should Exempt CO_2 from Combustion of Biomass derived Fuels. If EPA nevertheless promulgates GHG tailpipe emission standards, those emission standards should recognize that CO_2 emissions from the combustion of fuels derived from biomass ("biofuels"), because of the principle of carbon neutrality and best Carbon accounting practices, do not contribute to climate change and should not be counted against the proposed grams per mile emission standards. This would (1) make the GHG tailpipe emission standards consistent with the endangerment that the standards are supposed to be mitigating and (2) encourage the substitution of renewable fuels for fossil fuels, which EPA already is seeking to accomplish through other provisions in the proposed Tailpipe Rule. In fact, since the carbon-neutral motor vehicle emissions of CO_2 from biofuels do not contribute to the increase in atmospheric CO_2 concentrations which constitute the public endangerment in EPA's view, EPA lacks a statutory basis for restricting motor vehicle CO_2 emissions to the extent that they result from use of biofuels.

[See Docket Number OAR-2009-0472-7122.1, pp.6-9 for detailed comments pertaining to: Biofuel Combustion Is Carbon-Neutral and EPA Must Account for the CO_2-Neutrality of Biofuels To Be Consistent With Its Endangerment Finding]

American Forest and Paper Association (AF&PA)

Tailpipe Emission Standards Should Exempt CO_2 from Combustion of Biomass-derived Fuels If, despite the reasons set forth above, EPA nevertheless promulgates GHG tailpipe emission standards, those emission standards should recognize that CO_2 emissions from use of fuels derived from biomass ("biofuels"), because of the principle of carbon neutrality and best carbon accounting principles, do not contribute to climate change and should not be counted against the proposed grams/mile emission standards. This would (1) make the GHG tailpipe emission standards consistent with the endangerment that the standards are supposed to be mitigating and (2) encourage the substitution of renewable fuels for fossil fuels, which EPA already is seeking to accomplish through other provisions in the proposed GHG tailpipe standards. In fact, since the

carbon-neutral motor vehicle emissions of CO_2 from biofuels do not contribute to the increase in atmospheric CO_2 concentrations which EPA has proposed to find endangers public health and welfare, EPA would lack a statutory basis for restricting motor vehicle CO_2 emissions to the extent that they result from use of biofuels. [OAR-2009-0472-7126.1, p.5]

[See Docket Number OAR-2009-0472-7126.1, pp.6-9 for detailed comments pertaining to: Biofuel Combustion Is Carbon-Neutral, EPA Must Account for the CO_2-Neutrality of Biofuels To Be Consistent With Its Endangerment Finding, and The Proposed GHG Tailpipe Standards Could Be Modified To Recognize Biofuel CO_2-Neutrality]

Weber, David

There is no mention in the test procedure of a factor for bio-derived fuels. For example, there needs to be some allowance for OEM's to make arrangements to sell B100 diesel trucks to fleets and that the fuel economy number should count a B100 diesel truck as a zero CO_2 g/mi vehicle. This would need for the fleet owner to sign a written contract that he will only use the truck with B100 fuel for the life of the vehicle.

If CO_2 g/mi is a metric that is important, then the metric should actually be non-renewable (& verifiable) CO_2 g/mi. That is, B100 usage should count as zero CO_2 g/mi. If energy dependency is important, then biodiesel will be more home-grown, so the balance of trade will be improved. [OAR-2009-0472-1410, pp. 2]

Dinter, Bridget

I support the overall goal of greenhouse gas reduction, but find that the alternative fuel credit program proposed by the EPA has a serious flaw. This flaw is that the credit program only considers the emissions of the vehicle without regard to the emissions created by production of the fuel for the vehicle. [OAR-2009-0472-7250.1, p. 1]

The credit program designed by the EPA must be changed to include emissions involved in the production of alternative fuels. The current program only considers emissions that come directly from the vehicle as shown by the proposal's statement that, "…the CO_2 emissions of FFV's will be represented by the average of two things: the CO_2 emissions while operating on gasoline, and the CO_2 emissions operating on the alternative fuel multiplied by 0.15" 74 Fed. Reg. at 49,780. Calculating the carbon emissions in this manner is inaccurate because it does not take into account the difference in carbon emissions in production of the fuels. Because of this inaccurate calculation method, the credit program creates incentives to produce vehicles that will lead to an overall increase in carbon emissions. [OAR-2009-0472-7250.1, p. 1]

The EPA must consider the emission of carbons in the production of alternate fuels when giving alternative fuel credits or the overall emissions of carbon and other harmful pollutants may increase. A popular alternative fuel is corn ethanol. Under the current EPA proposal manufacturers of vehicles that run on corn ethanol will receive credits for emitting fewer greenhouse gases, but corn ethanol actually is worse for the environment than gasoline. In the article *Total versus urban: Well-to-wheels assessment of criteria pollutant emissions from*

various vehicle/fuel systems, researchers studied the overall carbon emissions of alternative fuels versus gasoline. Even though the researchers assumed future technological advancement in ethanol production, the study found that using vehicles run on corn ethanol instead of vehicles run on gasoline would result in significantly higher carbon emissions associated with use of vehicles. In addition to emitting more carbon, corn ethanol fueled vehicles emit 17-23% more volatile organic compounds, have up to 143% more emissions of PM□2.5, and have significantly greater NOx emissions (Hong, 1800-1802). The researchers who published *Climate change and health costs of air emissions from biofuels and gasoline* agree that corn ethanol would increase carbon and other dangerous emissions. Comparing combined climate change and health costs from emissions of gasoline run vehicles and those of corn ethanol run vehicles, these researchers found that corn ethanol vehicles always incurred larger costs. The combined climate change and health costs for gasoline run vehicles is $469 million while corn ethanol run vehicles have a combined climate change and health cost ranging from $472 million to $952 million depending on production methods. These studies make it very apparent that using corn ethanol as a fuel alternative would cause an increase in carbon emissions and other harmful emissions. This is why the EPA must rewrite the proposal to take into account the production emissions of fuels when determining whether or not to award credits for flexible fuel vehicles. [OAR-2009-0472-7250.1, pp. 1-2]

The EPA's current proposal for vehicle emission standards contains a credit program to reward companies that invest in alternative fuel vehicles. This program is flawed because it does not have measures to insure that the alternative fuels decrease carbon emissions when considering production of fuels. If the EPA does not take measures to ensure that credits are only given to alternative fuels that will not cause more harm than gasoline, these fuel emission standards will only lead to greater environmental degradation. This is why the EPA must investigate alternative fuels to ensure that these fuels will not worsen the environment before giving the automobile manufacturers incentives to create vehicles that use them. [OAR-2009-0472-7250.1, p. 2]

Schade, Michael

The premise that the contained renewable ethanol is completely free of net carbon emissions is part of the E85 example calculation. Has the heavy energy input to the crop production, conversion to ethanol, and transportation of raw materials and ethanol been premised to be zero? If yes, should a pragmatic estimate of those energy inputs and their carbon content be included as a partial offset to the premised E85 net carbon benefit? [OAR-2009-0472-7261.1, pp. 5]

EPA Response:

Georgia-Pacific and the American Forest & Paper Association commented that EPA's emission performance methodology should include lifecycle GHG emission reductions associated with biofuel use. Furthermore, if vehicles are fueled with biofuels that do not contribute to climate change, then they should not be counted against the gram/mile tailpipe emission standards. Citizens Bridget Dinter and Michael Schaede commented that EPA should include the lifecycle performance of biofuels in its final FFV credit program and consider the fact that that not all E85

has the same lifecycle GHG performance, e.g., ethanol made from corn versus cellulosic biomass.

EPA believes that tailpipe emissions from all vehicles including those fueled by biofuels must be controlled under the standards established by this rule regardless of upstream emissions. After considering these comments, EPA is not including the lifecycle GHG performance of biofuels (e.g., E-85 and B100) in its tailpipe emission standards or its FFV credit program. EPA recognizes that every motor vehicle fuel and fuel production process has unique upstream GHG emissions impacts, but fuel life-cycle GHG emissions impacts are beyond the scope of this rulemaking. EPA believes that tailpipe emissions from all vehicles including those fueled by biofuels must be controlled under the standards established by this rule regardless of upstream emissions. EPA has wide discretion under section 202(a)(1) and has chosen to first focus on vehicle tailpipe GHG emissions, both because tailpipe emissions are the largest single source of vehicle life-cycle GHG emissions, and because the EPA motor vehicle program has traditionally focused on tailpipe emissions. In addition, the nation is already on track for increasing biofuel use in response to the Energy Independence and Security Act of 2007 (EISA). EISA set aggressive biofuel targets reaching 36 billion gallons of renewable fuel by 2022, 21 billion gallons of which are advanced second-generation biofuels. The potential lifecycle GHG benefits associated with increased biofuel usage are already captured under EPA's recently-finalized RFS2 program and therefore should not be double-counted under today's Light-Duty Vehicle GHG program. Not only will it be challenging enough for automakers to demonstrate FFV E85 usage, the fungible nature of the fuel distribution system will make it difficult to determine the feedstocks used to make the biofuel portion of the fuel. And since the RFS2 rule already requires refiners and importers to blend an increasing amount of advanced biofuels into their fuel (e.g., cellulosic ethanol), the improved lifecycle performance of E85 is already captured under that program.

EPA's authority to adopt emissions standards under section 202(a)(1) is not limited to motor vehicles powered by fuels other than biofuels. Vehicles operating on biofuels do emit GHGs, and as discussed in the preamble, from a lifecycle perspective biofuels such as ethanol are not carbon neutral in the sense the commenter uses. EPA's recently promulgated Renewable Fuel Standard Program shows that, when you take into account aggregate lifecycle emissions including non-tailpipe GHG emissions (such as feedstock growth, transportation, fuel production, and land use), ethanol from corn using advanced production technologies emits about 20 percent less GHG than gasoline from oil.[10]

EPA considered the issue of upstream emissions and aggregate lifecycle GHG emissions of vehicles in the context of compliance values to use for vehicles that operate in whole or in part on electricity, as well as flex fuel vehicles (such as vehicles that operate on either gasoline or E-85). See preamble section III.C.3. From this it is appropriate to include biofuel-powered vehicles in the emissions standards, and to assign their measured tailpipe emissions of GHGs as their compliance value for purposes of this rulemaking. They do emit GHGs as tailpipe emissions, and their aggregate lifecycle emissions are not very different from the gasoline or diesel they replace. The renewable fuel program already provides a mandate for increased use of

[10] Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program (75 FR 14670, March 26, 2010)

such biofuels, and a change in the emissions standards in this rulemaking is not needed to provide an additional incentive. The FFV credit in place through MY2015 already provides an incentive for manufacturers to produce vehicles capable of using a biofuel, and this rulemaking is directed at automobile manufacturers and what they can do, not the operators of the vehicle who actually choose whether to use the biofuel. Changing the emissions standards for vehicles that use biofuels would not likely change how much biofuels are actually used. For example, data show that, on average, FFVs operate on gasoline over 99 percent of the time, and on E85 fuel less than 1 percent of the time.[11] This has occurred notwithstanding the CAFE credit for FFVs.

This is also fully consistent with the endangerment and contribution findings. EPA included all motor vehicles emissions in calculating emissions for purposes of the contribution finding, and did not exclude emissions from vehicles operated by biofuels. In addition, the content or form of the emissions control to follow under section 202(a)(1) was not relevant to the determination that the air pollution of atmospheric concentrations of GHGs endanger public health and welfare.

Single Fleet-wide Cap Comments

Organization: Honda Motor Company
Association of International Automobile Manufacturers (AIAM)

Comment:

Honda Motor Company

In the preamble, EPA and NHTSA state the intention of this regulation "…is to set forth a carefully coordinated and harmonized approach to implementing these two statutes." While harmonization is good, clearly the intent is not to make the regulations identical. EPA has sought to increase flexibility wherever possible, and this is often not the case where NHTSA is constrained by statute. Flexible Fuel Vehicle ("FFV") credits is one such case. EPA acknowledges that OEMs have relied in their planning on credits associated with FFVs, and is therefore planning to allow FFV credits through 2015, and thereafter intending to allow FFV credits only where fuel use can be proven. EPA's credit limits for FFVs (Table III.C.2-1) continue NHTSA's statutory-requirement to limit FFV credits by Car and Truck fleets. [NHTSA-2009-0059-0095.1, p.5]

Since EPA is not required to follow NHTSA's statutory limits and EPA is interested in maximizing flexibility, Honda recommends that each OEM be allowed to maximize its FFV credits on a fleet-wide basis. Each OEM could calculate its own car & truck fleet mix and apply this to the limits described in the aforementioned table. In the case where an OEM has a 70% mix of passenger cars and a 30% mix of light trucks in MY2012, an OEM could determine its fleet-wide credit limits as follows:

[11] EPA 2010, Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis, Section 1.7.4. EPA-420-R-10-006. February 2010. Docket EPA-HQ-OAR-2009-0472-11332

70% x 9.8 g/mile (car FFV credit limit in 2012) + 30% x 17.9 g/mile (truck FFV credit limit in 2012)

This approach enables Honda to offer E85 models that make the most sense for customers and their interest in fuel use. For example, by focusing exclusively on E85 trucks, Honda can maximize its E85 market and the potential for actual E85 fuel use. [NHTSA-2009-0059-0095.1, p.5]

Association of International Automobile Manufacturers (AIAM)

Under the proposal, flexible fuel vehicle (FFV) credit caps are applied separately to each manufacturer's car and truck fleet. In the case of the CAFE standards, this approach is required by statute. The effect of the separate caps is to require manufacturers to market FFVs in both fleets if they want to earn the maximum credit. However, the marketability of FFVs varies depending on such factors as the local availability of refueling infrastructure and the type of vehicle. AIAM urges EPA to establish a single cap for all FFVs and allow manufacturers to allocate the credit between their car and truck fleet as they deem most appropriate. By eliminating the separate caps, manufacturers would receive enhanced compliance flexibility while reducing consumer cost impacts. We recognize that our recommendation would involve reduced harmonization between the CAFE and greenhouse gas programs, but in this case the flexibility benefits outweigh the loss in harmonization. We would support a legislative amendment that would allow the same approach to be taken with regard to the CAFE program. [OAR-2009-0472-7123.1, p.15]

EPA Response:

EPA understands the comments that allowing manufacturers to combine their car and truck fleets into a single fleet for purposes of generating MY2012-2015 FFV standards would give them more flexibility to target their FFVs to the market segments they believe are most likely to use E-85. EPA also agrees that although this is not allowed under EPCA, the CAA would allow EPA discretion to structure the program in this way. However, the lead time concerns that persuaded EPA to replicate the EPCA FFV credits in the GHG rule through MY 2015 result from manufacturers' reliance on the EPCA regime, which does not include these additional flexibilities.

Additional Comments

Organization: Ford Motor Company
Chrysler Group LLC (Chrysler)

Comment:

Ford Motor Company

FFV Credits

Ford supports the inclusion of FFV credits in the EPA program. The Energy Independence and Security Act of 2007 (EISA) defines the credits allowed in the CAFE program. Ford agrees with EPA that by calculating the FFV CO_2 credit limit based on the individual manufacturer standards calculated from the footprint curves tracks more closely to the CAFE FFV credit limits. In order to harmonize the EPA and NHTSA programs to the greatest extent possible, Ford does not support the use of the proposed FFV CO_2 Standard Credit Limits for cars and trucks shown in Table III.C.2-1 of the preamble. Rather, to ensure that the proper amount of credit is allocated to a manufacturer, Ford recommends adoption of the calculated method for the FFV CO_2 credit limit.

FFV Credits-Demonstration of Alternative Fuel Usage / Ratio of Operation

Ford urges the agencies to provide manufacturers with flexibility in demonstrating alternative fuel use and ratio of operation, and agrees that the 'top-down' approach described in the preamble of the proposed rule is reasonable and should be retained. This method, which uses national alternative fuel use data coupled with a VMT analysis using the EPA Motor Vehicle Emission Simulator model to determine the ratio of alternative fuel and base fuel for new vehicles being sold, is the most cost-effective and least error-prone option. A cost-effective alternative is essential to provide manufacturers with adequate incentives to continue producing FFVs (which may have difficulties and/or additional cost in meeting certain requirements). Allowing the use of national alternative fuel use data would eliminate the expense of adding an on-board data collection system, as well as the difficulty of accessing such systems and the chance of errors in gathering the data.

Of course, the addition of a fuel-use requirement only serves to penalize the automobile manufacturers for the lack of an adequate E85 fueling infrastructure. The agencies should institute additional programs to promote the availability of E85 at filling stations around the country, so that consumers will be able to take full advantage of the flex-fuel capabilities of the many FFVs on the road.

Ford also recommends that differences in refueling frequency of newer and older FFVs be accounted for. Awareness of FFV capability (and therefore likelihood of refueling) is higher for current models than older models, and will increase further as the alternative fuel becomes more available. Therefore, these newer vehicles should be given appropriately larger portion of the alternative fuel use credit. This portion or amount could be determined by EPA with surveys of current and past FFV customers as well as other analysis. [OAR-2009-0472-7082.1, pp. 8-9]

Chrysler Group LLC (Chrysler)

Chrysler supports the inclusion of flexible fuel and alternative fuel vehicle incentives. These incentives encourage manufacturers to continue production of vehicles capable of running on alternative fuels as the production and distribution systems of such fuels are developed. The lower carbon intensity of such fuels is an opportunity for further greenhouse gas reductions and increased energy independence. The continuance of such incentives recognizes the important potential of this technology to reduce GHGs. [NHTSA-2009-0059-0124, p.35]

However, Chrysler is concerned that the proposed flexible fuel and alternative fuel vehicle credits are not harmonized between the EPA and NHTSA programs. The EPA flexible fuel vehicle greenhouse gas credits are capped in a manner inconsistent with NHTSA's CAFE program. The caps result in more stringent greenhouse gas standards than CAFE standards. [NHTSA-2009-0059-0124, p.35]

EPA Response:

Credit Limits

The FFV credit limits for CAFE are 1.2 mpg for model years 2012-2014 and 1.0 mpg for model year 2015.[12] In CO_2 terms, these declining FFV credit limits translate to declining CO_2 credit limits over the four model years. As the CAFE standard increases numerically, the credit limit becomes a smaller fraction of the standard. EPA proposed, but is not adopting, credit limits based on the overall projected industry average CO_2 standards for cars and trucks. EPA also requested comments on basing the calculated CO_2 credit limits on the individual manufacturer fleet-average standards calculated from the footprint curves. Ford commented supporting this approach and also in support of harmonizing with CAFE to the greatest extent possible. EPA also received comments from Chrysler recommending that the credit limits for an individual manufacturer be based instead on that manufacturer's fleet average performance. The commenter noted that this approach is in line with how CAFE FFV credit limits are applied. This is due to the fact that the GHG-equivalent of the CAFE 1.2 mpg cap will vary due to the non-linear relationship between fuel economy and GHGs/fuel consumption. EPA agrees with Chrysler's suggested approach since it best harmonizes how credit limits are determined in CAFE and is needed to address issues of lead time, as explained above.. EPA intended and continues to believe it is appropriate to provide essentially the same FFV credits under both programs for MYs 2012-2015. Therefore, EPA is finalizing FFV credits limits for MY2012-2015 based on a manufacturer's fleet-average performance. For example, if a manufacturer's 2012 car fleet average emissions performance was 260 g/mile (34.2 mpg), the credit limit in CO_2 terms would be 9.5 g/mile (34.2 mpg – 1.2 mpg = 33.0 mpg = 269.5 g/mile) and if it was 270 g/mile the FFV credit limit would be 10.2 g/mile.

Methodology for MY2016 and Later Demonstration of Actual Alternative Fuel Usage

In the proposal, EPA considered an option of establishing a rebuttable presumption using a "top-down" approach based on national E-85 fuel use to assign credits to FFVs sold by manufacturers under this program. For example, national E-85 volumes and national FFV sales could be used to prorate E-85 use by manufacturer sales volumes and FFVs already in-use. EPA would conduct an analysis of vehicle miles travelled (VMT) by year for all FFVs using its emissions inventory MOVES model. Using the VMT ratios and the overall E-85 sales, E-85 usage could be assigned to each vehicle. This method would account for the VMT of new FFVs and FFVs already in the existing fleet using VMT data in the model. The model could then be used to determine the ratio of E-85 and gasoline for new vehicles being sold. Fluctuations in E-85 sales and FFV sales would be taken into account to adjust the credits annually.

[12] 49 U.S.C 32906 (a).

Ford commented in support of this type of methodology and recommended "that differences in refueling frequency of newer and older FFVs be accounted for. Awareness of FFV capability (and therefore likelihood of refueling) is higher for current models than older models, and will increase further as the alternative fuel becomes more available. Therefore, these newer vehicles should be given appropriately larger portion of the alternative fuel use credit. This portion or amount could be determined by EPA with surveys of current and past FFV customers as well as other analysis." EPA is finalizing its intention to conduct a top-down analysis upon written request. EPA will consider Ford's comments regarding vehicle refueling frequency in conducting this analysis, with the understanding that VMT and refueling frequency are closely related.

EPA understands that Ford would like EPA to promote the availability of E-85 refueling stations. However, these comments regarding refueling infrastructure are beyond the scope of this rulemaking.

5.7.3 Advanced Technology Vehicle Incentives for Electric Vehicles, Plug-in Hybrids, and Fuel Cells

In the proposal, EPA stated the following: "EPA is proposing additional credit opportunities to encourage the early commercialization of advanced vehicle powertrains, including electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCVs). These technologies have the potential for more significant reductions of GHG emissions than any technology currently in commercial use, and EPA believes that encouraging early introduction of such technologies will help to enable their wider use in the future, promoting the technology-based emission reduction goals of section 202(a)(1) of the Clean Air Act."

Specifically, EPA proposed two mechanisms by which advanced technology vehicles could earn credits: 1) a zero grams/mile compliance value for EVs, FCVs, and PHEVs when operated on grid electricity, and 2) a vehicle multiplier in the range of 1.2 to 2.0. EPA requested comment on providing some type of incentive for advanced technology vehicles, the appropriateness of both the zero grams/mile and vehicle multiplier incentive mechanisms, and on any alternative approaches for addressing advanced technology vehicle incentives.

EPA received significant public comment on this issue. Most of the commenters responded directly to EPA's request and focused their comments on the proposed zero grams/mile and vehicle multiplier mechanisms. Accordingly, there is significant overlap among the comments on this issue, and the structure of this section is to provide a comprehensive sampling of excerpts of 49 of the most detailed public comments on this topic (in Section 5.7.3.1), in alphabetical order, followed by an EPA response to the comments organized into 4 sections:

- Whether to provide an incentive for advanced technology vehicles (Section 5.7.3.1)
- The zero grams/mile compliance value for EVs, FCVs, and PHEVs when operated on grid electricity (Section 5.7.3.2)
- The vehicle multiplier (Section 5.7.3.3)
- Miscellaneous issues related to the advanced technology vehicle incentive program (Section 5.7.3.4)

5.7.3.1 Comments

Organization:

Alliance of Automobile Manufacturers (Alliance)
American Council for an Energy Efficient Economy
BMW of North America, LLC (BMW)
BorgWarner
California Air Resources Board
Chew, Yuli
Chrysler Group LLC (Chrysler)
Clean Energy Fuels
Cummins Inc.
Ecology Center
Energy, Environmental & Public Utility Practice Group
Environment Michigan
Environment New Jersey
Environmental Defense Fund
eTec
Fisker Automotive, Inc.
Ford Motor Company
Glasser, Mark
Honda Motor Company
Honeywell Transportation Systems
Hyundai Motor Company
International Council on Clean Transportation
Investor Network on Climate Risk
Karplus, Valerie J.
Massachusetts Department of Environmental Protection
Mercedes-Benz (Daimler AG)
Mitsubishi Motors R & D of America (MRDA)
Motor and Equipment Manufacturers Association
National Association of Clean Air Agencies (NACAA)
National Automobile Dealers Association (NADA)
Natural Resources Defense Council
New York State Department of Environmental Conservation
New York University School of Law, Institute for Policy Integrity (IPI)
Nissan North America
Northeast States for Coordinated Air Use Management
Physicians for Social Responsibility, Los Angeles
Public Citizen and Safe Climate Campaign
SABIC Innovative Plastic
Sierra Club
South Coast Air Quality Management District
State of New Jersey
State of Washington Department of Ecology
Toyota Motor North America

Union of Concerned Scientists
United Auto Workers
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
University of Pennsylvania, Environmental Law Project
U.S. Coalition for Advanced Diesel Cars
Volkswagen Group of America (Volkswagen)

Comment:

Alliance of Automobile Manufacturers (Alliance)

Tailpipe CO2 from EVs and the Electric-Only Portion of PHEVs/EREVs

EPA proposes to include EVs in the fleet average calculation at a rate of zero g/mi. EPA likewise proposes to include as zero g/mi of CO2 the electric portion of PHEVs, EREVs, and fuel cell vehicles. 74 Fed. Reg. 49,533-4. The Alliance supports this approach since customers need to receive a clear signal that they have made the right choice by preferring an EV, PHEV or EREV. However, the Alliance recognizes the need for a comprehensive approach with shared responsibility in order to achieve an overall carbon reduction. [OAR-2009-0472-6952.1, p. 29]

Advanced Technology Vehicle Credit Multiplier

EPA has taken into consideration the additional effort that manufacturers will take in introducing Advanced Technology Vehicles (ATVs) to the public. 74 Fed. Reg. 49,533. It is also extremely important that this multiplier be treated the same for all ATVs; the battery electric vehicles, extended range electric vehicles, plug-in hybrid electric vehicles and fuel cell vehicles EPA mentions in the NPRM. Moreover, the hydrogen internal combustion engine vehicle should also be included as an advanced technology vehicle covered by the multiplier. This technology is under development by some manufacturers today and has zero CO2 emissions. The H-ICE vehicle needs to receive the same credit multiplier and advanced technology vehicle treatment to prevent EPA from showing technology preferences or limiting possible technologies. [OAR-2009-0472-6952.1, pp.29-30]

Considering all of the issues and challenges to introduce ATVs, the 2.0 multiplier is needed longer than a single model year. Instead of decreasing the ATV multiplier by a factor of 0.2 each year, with the multiplier completely phased out by the 2017 model year, EPA should maintain a 2.0 credit multiplier until ATVs make a 10% penetration into the vehicle market. Without this penetration level, it will be impossible for the true environmental benefits of ATVs to be realized. Extending the 2.0 multiplier will make ATV costs more reasonable and promote these technologies. [OAR-2009-0472-6952.1, p.30]

While building ATVs is the responsibility of the automotive industry, it takes more than just production for true emissions reductions from ATVs to be realized. It is necessary to have fueling and service infrastructure to support these technologies. Customers will not purchase ATVs if they can neither fuel them nor have them repaired. Developing and establishing this infrastructure for the nation will take a long time -- far more than a single year, or even the time

frame outlined within this regulation. In fact, when examining all of these issues, a multiplier even greater than 2.0 should be considered. [OAR-2009-0472-6952.1, p.30]

In encouraging these technologies, Congress has repeatedly provided consumers with tax credits for their purchase of ATVs. The reason behind these tax credits are to offset the additional cost of purchasing an ATV and the environmental benefit each ATV provides. The same reasoning holds true to manufacturers: each ATV is very expensive, and manufacturers need the additional credits to help offset the expense, especially given the infrastructure challenges, fluctuating fuel prices and the resulting difficulty of predicting consumer demand. [OAR-2009-0472-6952.1, p.30]

American Council for an Energy Efficient Economy

ACEEE does not support the use of Advanced Technology Vehicle (ATV) credits. ATV credits would apply weights of greater than one to certain vehicles in calculating manufacturer average emissions, in effect crediting those vehicles with greater reductions than they will actually provide. Use of such credits would detract from the emissions reductions achieved by the proposed standards. A reasonably stringent GHG emissions standards program provides an incentive for the production of low-emitting vehicles simply by virtue of those vehicles' ability to help manufacturers reach the required average emissions levels.

ACEEE actively supports government programs to accelerate the development and deployment of advanced technology, high-efficiency vehicles, including for example existing tax credits for hybrids and plug-in hybrids, as well as the $2.4 billion allocated by the 2009 American Recovery and Reinvestment Act for battery manufacturing, electric drive programs and the deployment of electric vehicles. A standards program is not, however, well-suited to incentivizing particular technologies, because the result is to undermine the standards. Such incentives can also have unintended, adverse consequences, as the dual fueled vehicle (AMFA) credit demonstrates. The AMFA credit both reduces the fuel savings of the CAFE program and allows manufacturers to lag in developing high-efficiency vehicles. The AMFA credit also illustrates how difficult it is to eliminate a credit of this kind once it has been put in place, even when it is broadly acknowledged that the program does not serve the intended purpose and in fact is counterproductive.

By contrast, off-cycle technology credits should be considered if they can be plausibly shown to deliver actual reductions that otherwise would go unrecognized under the rule. Further, EPA should take into account the potential for emissions reductions from off-cycle technologies in setting the level of standards beyond 2016. This will increase the emissions reductions that can be achieved through the rule.

Recommendations: 1. Attribute to advanced technology vehicles only those emissions reductions they are expected to achieve. If ATV credits must be created, minimize the multiplier used and ensure that the program is not extended beyond 2016. 2. Consider permitting off-cycle credits for vehicle technologies that can be shown to achieve quantifiable reductions in emissions; take into account potential reductions from these technologies in setting standards beyond 2016. 3. For purposes of the rule, define emissions of EVs as full fuel cycle emissions, adjusted as appropriate

to account for upstream emissions from gasoline vehicles. 4. Calculate EV emissions to reflect i) the efficiency of the vehicle (kwh per mile), and ii) emissions associated with electricity generation in the power pool where the vehicle is purchased, using marginal emissions rates based on reasonable assumptions about time-of-day charging patterns.

[ACEEE also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 140-144.]

BMW of North America, LLC (BMW)

Advanced technology vehicles play a major role in attaining sustainable mobility in the long term. Therefore, the right framework has to be established early on for less carbon-intensive vehicles which are currently available but face uncertain market and customer expectations. The regulatory framework also strongly determines how advanced technology vehicles are perceived in the market. Consequently, BMW supports EPA's proposal regarding the greenhouse gas emissions calculation for electric vehicles and multipliers for advanced technology vehicles. [OAR-2009-0472-7145.1, p.5]

An increase in advanced technology vehicles will result in a mix of fuels and electric power used in the transportation sector. The environmental impact of the latter strongly depends on the mix of fossil and non-fossil power generation which is defined by national or the utilities' corporate energy policies and beyond the control of vehicle manufacturers. By proposing to calculate the emissions of an electric vehicle with 0g/mi, EPA is properly endorsing the concept of shared responsibility. BMW therefore would greatly appreciate the promulgation of a final regulation that considers only tailpipe emissions and treats electric vehicles with 0g/mi. This is a clear signal for sustainable mobility and suggests to customers that they have made the right choice. [OAR-2009-0472-7145.1, p.5]

The intention of EPA and NHTSA is to achieve the highest possible degree of harmonization in both regulations. Therefore, BMW recommends treating electric vehicles in the GHG regulation in the same way as in the CAFE regulation. For CAFE purposes, the electric energy consumption is converted into a petroleum equivalent fuel economy "mpge"= 82,049[Wh/gall]/ Energy Consumption [Wh/mi]. To be treated equally in both regulations for electric vehicles a much higher mpg figure should be achieved by the conversion of electric energy consumption into mpge, as there indeed is no gallon consumption. [OAR-2009-0472-7145.1, p.6]

In order to reflect a proper consideration of other advanced technology vehicles, i.e. range-extender vehicles or plug-in hybrids, these vehicles should be evaluated in relation to electric vehicles and their greenhouse gas impacts. [OAR-2009-0472-7145.1, p.6]

Beyond the regulatory framework directly and exclusively addressing the auto industry, and with respect to overall greenhouse gas reduction and shared responsibilities, a comprehensive approach should be considered which addresses the stakeholders involved. Instruments such as cap-and-trade, carbon taxes, etc. which are currently under discussion should be evaluated to implement a comprehensive approach for the de-carbonization of the transportation sector in the most effective and cost-efficient manner. [OAR-2009-0472-7145.1, p.6]

Multiplier for Advanced Technology Vehicles

In addition to the calculation of greenhouse gas emissions from advanced technology vehicles, EPA is proposing to grant multipliers for a certain time period. In order to encourage the market penetration of these vehicles, BMW believes a constant multiplier of 2 is appropriate. Beyond this, BMW also recommends considering multipliers for clean diesel vehicles that meet California's strict emissions requirements for criteria pollutants in order to increase their market share and deliver a clear signal by regulators in support of this highly cost efficient and rapidly available policy option. As clean diesel vehicles contribute significantly to reduced greenhouse gas emissions at a reasonable price, a multiplier of up to 1.5 should be appropriate. [OAR-2009-0472-7145.1, p.6]

With respect to this joint rulemaking and to achieve as much consistency between both the GHG and CAFE standards as possible, BMW recommends adoption of multipliers for advanced technology vehicles in the CAFE regulation as well. [OAR-2009-0472-7145.1, p.6]

As an incentive for performance improvement, we also strongly support the proposed credit options available to all manufacturers, including availability of advanced technology credits in the form of a multiplier to encourage commercialization of electric vehicles and off cycle innovative credits for new CO2 emissions reductions technologies whose benefits are not currently captured in the test procedures. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp.135-136.]

BorgWarner

Moreover, the joint proposal allows for varying credit options and multipliers for vehicles operating on different fuels. Because these vehicles compete in the same market, it creates market deformation. For example, the suggested allowance under the advanced technology credits for plug-in electric or plug-in hybrid electric vehicles provides for a 0 (g/ml) CO2 measurement and counts the vehicle volumes as two times their actual value. This drives very aggressive support for vehicle electrification and associated technologies. In today's atmosphere of limited capital this could also impede the development and market introduction of more conventional, cost-effective solutions that utilize existing infrastructure in large volumes resulting in better real-world results. [OAR-2009-0472-7289, p.2]

California Air Resources Board

Second, EPA needs to assign a non-zero upstream greenhouse gas emission factor for zero-emission vehicles (ZEVs). EPA has proposed to make additional credits available for advanced technology vehicles such as electric vehicles (EVs), plug-in hybrids and fuel cells. However, EPA is proposing to ignore the lifecycle greenhouse gas emissions of these vehicles by assigning a value of zero grams per mile towards compliance with the national standard. Furthermore, the NPRM proposes that a multiplier ranging from 1.2 to 2.0 be assigned for each vehicle. While the intent is to encourage the early development and production of advanced vehicle powertrains – a goal with which CARB agrees – the proposed credits for these technologies are excessive. In light of some manufacturers' announcements for large scale production of EVs, the potential

magnitude of these credits may delay the implementation of improved GHG technologies on conventional vehicles, thereby reducing the effectiveness of the proposed program.

Accordingly, EPA should strike a balance between encouraging advanced vehicle development and protecting greenhouse gas reductions by assigning lifecycle emissions to these vehicles. Several studies suggest that a lifecycle emission value of 200 grams per mile would be appropriate for EVs on the national grid. Assigning that or a similar supported value will provide appropriate credit applying the 1.2-2.0 vehicle multiplier. Because significant numbers of commercially available EVs and fuel cell vehicles will be needed in the 2020 timeframe to achieve the greenhouse gas reductions required to meet the long term goal of reducing global warming, such credits should be restricted to EVs and fuel cell vehicles only. [OAR-2009-0472-7189.1, p.2]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

Chew, Yuli

However, in order to advance newer and efficient technologies, I believe that there still need to have multipliers for Battery Electric Vehicles (BEV) over 100 miles range and Fuel Cell Vehicles (FCV) to meet one of our energy goals: energy independence. [OAR-2009-0472-7042.1, p.3]

I support the second issue by expressing credits based on vehicle lifetime mileage estimates. A typical lifetime miles for cars is less than for trucks. A dirtier truck will have more environmental impact when putting into service as compared to a Partial Zero Emission Vehicle that has a warranty of 15 years or 150,000 miles. The environmental impact on a truck can be tens of times over the introduction of a battery electric vehicle into the same marketplace. [OAR-2009-0472-7042.1, p .3]

I support the use of "bonus" credits to encourage the earlier introduction of new technologies vehicles. However, the approach should be similar to what CARB adopted in ZEV Regulation. This can vary from giving a factor of 1.0 for utility EV with less than 50 miles range to 7.0 for Type V FCV that can travel over 300 miles range and has a fast charge of less than 15 minutes. The three technologies, EV, PHEV and FCV should not be given the same value. They are preferred to phrase down over the same block of time range as CARB's ZEV Regulation, 2009 - 2011, 2012 – 2014, and 2015 and beyond. I would support "bonus" multiplier be allowed for FCV beyond 2017 and BEV that can travel beyond 100 miles range BEV. [OAR-2009-0472-7042.1, p.4]

Rather than treating EV having 0 g/mi of GHG, I would prefer that it the EV should just get the benefits of what the grid offers. Similar to California's grid, EV is still considered to have an upstream emission of 130 g/mi. Over time, it should be based on the weighted average of these advance vehicles technologies are applied. [OAR-2009-0472-7042.1, p.4]

For multiplier of EV after 2016, while awarding different multipliers based on different grids are difficult to achieve, EPA should based the actual contribution to the greenhouse gas reduction based on the distribution of the vehicles based on the weighting contribution of the grid at which these vehicles are deployed. [OAR-2009-0472-7042.1, p.4]

Chrysler Group LLC (Chrysler)

Chrysler agrees with the EPA that incentives should be provided to 'encourage the early commercialization of advanced vehicle powertrains.' [NHTSA-2009-0059-0124, p.26]

Advanced Technology Vehicle Volume Multiplier

Although great strides have been taken recently in the development and commercialization of advanced technology vehicles, the incremental costs of these technologies remain high. Volume multipliers effectively reduce the technology cost per ton of emissions reduced to a level more equivalent to that of applying improvements to conventional technologies. As shown in the table below, Chrysler estimates a volume multiplier of 3-6X for advanced technology vehicles is necessary to achieve cost parity with the cost / benefit ratios assumed by EPA for conventional technology improvements. As a marketplace develops increasing volumes, the incremental costs of the technology drop, but the cost to emission benefit ratio continues to remain much higher. [NHTSA-2009-0059-0124, p.26]

Recommendation

Chrysler recommends that a minimum volume multiplier of 3-6X be applied to advanced technology vehicles as an incentive for early production of advanced technology vehicles. [NHTSA-2009-0059-0124, p.26]

Phase Down of the Advanced Technology Vehicle Volume Multiplier

Advanced technology vehicle volume production is still in its infancy. Aside from a few small volume manufacturers producing a handful of vehicles per year, no manufacturer has placed a significant number of advanced technology vehicles in the hands of common customers. In the near term, the ability to apply advanced technology powertrains to vehicles is limited by several factors including the lack of a commercially viable and affordable battery, vehicle redesign/refresh schedules and current economic conditions. [NHTSA-2009-0059-0124, p.27]

The historical market penetration of hybrid electric vehicles (HEV) suggests that significant volumes of advanced technology vehicles will not occur within the time frame of this rulemaking. The first modem mass market HEV (Honda Insight®) was introduced in 1999.5 Four years later (2003) the HEV market penetration was only 0.3%.6 The next five years saw a market penetration growth of approximately 0.5% per year, reaching 2.6% in 2008. 7 To this day, hybrid electric vehicles still have not become a common consumer choice in the marketplace, almost ten years after their mass market introduction. Given that advanced technology vehicles also require infrastructure changes for viability (such as home and public

electrical charging stations) and higher price, these vehicles are likely to have similarly slow market penetration rates. [NHTSA-2009-0059-0124, p.27]

Recommendation

Chrysler recommends that the volume multiplier not be phased down for the period considered by this rulemaking. [NHTSA-2009-0059-0124, p.27]

Volume Multipliers for Different Advanced Technology Vehicle Types

At this early stage of advanced technology vehicle development there are no clear 'winners'. Chrysler recommends that the vehicle multiplier should be the same for all advanced technology vehicles. [NHTSA-2009-0059-0124, p.27]

Assignment of an Electric Vehicle Operation Emission Value of 0 g/mi

Chrysler supports the assigned value of 0 g/mi greenhouse gas emissions for the electric portion of the operation of advanced technology vehicles. This approach is consistent with other federal programs, by not forcing upstream emission accounting on downstream manufacturers. For example, electric generation power plants do not account for emissions associated with producing their energy feedstock. The approach is also consistent with existing light-duty vehicle Tier 2 emission regulations in which vehicle manufacturers are responsible for emissions produced by vehicles, but are not responsible for controlling emissions associated with the production and transportation of conventional fuels. [NHTSA-2009-0059-0124, p.27]

Advanced technology vehicle credits will not result in a lack of innovation and application of greenhouse gas reducing technologies on conventional internal combustion engine fleets.

Oral testimony at the Detroit, MI public hearing on this Proposed Rule indicated some concern that manufacturers may be able to fore go significant improvements in conventional fleets based on producing significant volumes of advanced technology vehicles. However, in the time frame of this rulemaking, advanced technology vehicles are not expected to achieve significant market penetration. Furthermore, to remain competitive, all manufacturers, regardless of advanced technology vehicle production, will need to make similar gains in conventional vehicle efficiency. [NHTSA-2009-0059-0124, p.28]

Clean Energy Fuels

[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 134-136.]

Tank to Wheels Undervalues Low to Ultra Low Carbon Fuels
and Potentially Overvalues Zero Emission Vehicle Strategies

Clean Energy believes it is potentially irresponsible, and possibly hazardous, to exclusively regulate vehicles on a 'tank to wheels' basis, as such an analysis fails to evaluate the upstream

emissions associated with the very strategies a rulemaking aims to promote. For example, according to the lifecycle pathways provided by the California Air Resources Board for various fuels, electric vehicles that draw on a California marginal electricity mix of natural gas and renewable energy sources (which is the best case scenario) achieve a carbon intensity value of 38.78 g/MJ CO2eq whereas a CNG light-duty vehicle powered by bio-methane produced from a California landfill can achieve 11.26 G/mj CO2eq target (or roughly a 71 percent advantage over an electric vehicle). By not accounting for upstream emissions, the bio-methane advantage would be erased and the new value for that CNG vehicle would be 68 g/MJ CO2 eq or a 43 percent disadvantage. That's a problem because it sends exactly the wrong message to the market. Any rulemaking that places the lowest carbon fuel strategies at a disadvantage to poorer strategies is counterproductive, and we encourage both EPA and NHTSA to revise the rulemaking to prevent such an outcome. By evaluating zero emission vehicle strategies from a 'tank to wheel' only perspective, the rule fails to capture the actual greenhouse gas benefit, in fact, it overestimates it, and it prevents superior strategies from entering the transportation market. We highly discourage this practice.

Cummins Inc.

EPA is proposing credits for advanced technologies such as fuel cell vehicles, plug-in hybrid electric vehicles, etc. to encourage their development. Cummins supports providing such credits to manufacturers in the form of a volume multiplier and 0 g/mile CO2 emissions for electric operation for MY 2012-2016. Cummins urges that, after MY 2016, EPA should take a holistic view of CO2 emissions from such vehicles, including upstream emissions from electricity generation. This would ensure a level playing field for all CO2-reducing technologies in the light-duty vehicle market. [OAR-2009-0472-7205.1, p.4]

Ecology Center

The Ecology Center would like to comment on the Advanced Technology Vehicle Credits provision in the proposed rule, aimed at incentivizing early commercialization of electric vehicle technologies. While we are supportive of the general intent of the proposed credits, we are concerned that the combination of both a multiplier and a zero grams/mile of CO2 value for electric propulsion may be overly generous and could unfairly skew a manufacturer's compliance obligations. We also understand that the intent is for use only in the 2012 - 2016 timeframe, but are concerned that these credits could become increasingly part of a firm's compliance strategy toward the end of the compliance period when the credits would be scheduled to end. It would seem to make more sense to phase-down any credits allowed in a manner similar to the dual-fuel vehicle credits. In general, however, we believe more work is needed to study both the potential affect of this proposed provision on compliance and achieved emission levels, as well as the way the credits are structured, including their timing. [OAR-2009-0472-4068, p.2]

Energy, Environmental & Public Utility Practice Group

How the Rule Could Encourage Public Charging Infrastructure

The EPA and NHTSA have a unique opportunity finally to help solve this dilemma by making PCI eligible for CO2 credits under the Rule, like advanced air conditioners credits and other technologies. The importance of deploying vehicles and refueling infrastructure in a single coherent system is a consistent theme in prior analyses of transition barriers to alternative fuels. By classifying PCI as a technology eligible for CO2 credits EPA could help support a business case for the deployment of PCI in advance of PEVs, thus helping to create the necessary market conditions for electric technology to take root. Absent such support it seems unlikely that the Rule will induce a significant level of vehicle electrification. The Agency readily admits that the proposed standards can be met with existing enhancements to internal combustion engine technology and with little to no penetration of diesel engines, hybrid electric vehicles (HEV), plug-in hybrid electric vehicles (PHEV), or pure-battery electric vehicles (BEV). In other words, by themselves, the CO2 standards will not necessarily induce investment in electric technology. More will be needed. [OAR-2009-0472-7251.1, p.3]

By allocating CO2 credits to PCI under the Rule, EPA would align the benefits of PCI with primary beneficiaries in the value chain, the vehicle OEMs, by monetizing the fuel economy benefits of charging infrastructure. In turn, the Agency could help to solve the longstanding 'chicken or egg' problem of how to pay for alternative fuel infrastructure before significant numbers of alternative fuel vehicles are on the road. At the same time EPA and NHTSA would reduce the costs of compliance with the Rule by expanding the supply of credits available to OEMs. [OAR-2009-0472-7251.1, p.3]

To create market conditions that will spur investment in public charging infrastructure, the Agency should provide CO2 credits to public charging stations at a level approximating their impact on fuel economy and market development. This approach is similar to the Agency's proposal to provide air conditioning leakage credits of between 12.6 and 15.7 g/mi CO2e for investments in improvements to A/C systems. [OAR-2009-0472-7251.1, p.3]

[See Docket Number OAR-2009-0472-7251.1, pp.1-4 for detailed comments pertaining to: Why Lack of Public Charging Infrastructure is a Barrier to PEV Market Penetration and How the Rule Could Encourage Public Charging Infrastructure]

Why EPA Should Provide Credits for Public Charging Infrastructure

Sustained government policies will be crucial to the deployment of PCI, a key enabler of vehicle electrification and enhanced petroleum and carbon reduction. Much like how fiber optic infrastructure investment in the late 1990's fostered an explosion of information technology, abundant PCI will be a critical factor in the electrification of vehicles. By crediting PCI under the Rule, EPA could encourage deployment of PCI and thereby achieve greater petroleum and carbon reduction. [OAR-2009-0472-7251.1, p.8]

See Docket Number OAR-2009-0472-7251.1, pp.4-23 for detailed comments pertaining to: Background on PEV Charging and Why EPA Should Provide Credits for Public Charging Infrastructure] \

Environment Michigan

[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 68-69.]

Second, we're concerned that electric vehicles will be given lavish credits that will undercut the actions automakers must take to reduce emissions from the rest of their fleet. The proposal ignores the very real emissions that result when electric vehicles are charged with electricity that is often generated from coal and natural gas.

Environment New Jersey

We also want to make sure that although Environment America and Environment New Jersey are huge supporters of alternative technologies like electric cars, we do want to ensure that the credits are not so much that they will undercut actions the automakers would do to reduce emissions from the rest of their fleet. [EPA-HQ-OAR-2009-0472-4621, p.76]

Environmental Defense Fund

The Final Standards Should Be Designed to Account for the Real-World Greenhouse Gas Emissions Associated with Electric Vehicles

EPA's proposed treatment of emissions from electric vehicles profoundly under counts the actual global warming emissions that will occur. The Agency has proposed to include electric vehicles ("EVs") in each manufacturer's fleet-wide standard and to treat EVs as if they had emissions of zero grams per mile of CO2. As EPA notes, "in reality, the total emissions off-set … is not zero, as there is a corresponding increase in upstream CO2 emissions due to an increase in the requirements for electric utility generation." [OAR-2009-0472-7285.1, p. 24]

While we appreciate the agency's interest in promoting advanced technologies such as EVs, there are a host of policies to support the advancement of EVs and the zero grams per mile standard is plainly unrepresentative of the environmental realities of using EVs. A recent National Research Council study concluded that the health and non-climate related environmental impacts of traditional pollutants associated with EVs are comparable to, and in some cases higher than, those associated with conventional gasoline and diesel engines, on a lifecycle basis. When considering greenhouse gas emissions of different types of vehicles, the same report concluded that EVs caused lower CO2 emissions than conventionally-fueled vehicles, but higher emissions than vehicles fueled by hydrogen or certain types of E85 fuel. Furthermore, when the California Air Resources Board ("CARB") considered the same question, CARB determined that EVs account for 130 grams per mile of upstream emissions. CARB built flexibility into the analysis by allowing manufacturers to lower the 130 grams per mile number by demonstrating, among other things, the percentage of electricity generated in California by renewable sources. [OAR-2009-0472-7285.1, p. 24]

The greenhouse gas emissions profile of the nation's electricity generating portfolio varies considerably from state-to-state and across regional electricity grids. Further, the greenhouse gas burden of EVs will depend not only on the emissions profile of the grid but the volume and time of use. While EDF supports commercialization of these advanced technologies, we also strongly

request that Agencies ensure analytical rigor in their deployment. Accordingly, we ask that EPA, with its considerable institutional expertise at the convergence of electricity and the environment, develop a rigorously tailored emissions rate associated with upstream electricity generation that is properly applied to EVs. [OAR-2009-0472-7285.1, p. 24]

You asked some questions about your proposals for electric vehicles and plug-in hybrid electric vehicles. These are very exciting technologies and I think you're right to think about ways of encouraging them, particularly in the early years. Some kind of an early commercialization credit probably makes sense. Whether it should start off at two in an earlier year like 2011 or 2012 may be fine. Scaling it down, in our view, we would recommend that you phase it out by 2016, the same year in which you're phasing out the flex fuel vehicle credit absent actual showing. I think you do propose phasing it out by 2017, but that, of course, is a future rulemaking. So it seems to me there would be some -- after all, that's still, you know, eight model years away or seven model years away, I guess, six model years away, but that's what we would, you know, urge you to do. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 122.]

eTec

I am aware that the commenting period is over for the CAFE standards, but I was hoping to submit my suggestions nonetheless.

I have attached an article that is to be published in the next issue (January/February) of the International Journal of Electric and Hybrid Vehicles (IJEHV) that discusses hybrid vehicle nomenclature and fuel economy procedures for plug-in hybrids. I would be happy to discuss my thoughts with the relevant EPA personnel, and I can be reached at this email address. [OAR-2009-0472-7670, p.1]

[Comment referenced above, Docket Number OAR-2009-0472-7670.1, is a copyrighted document.]

Fisker Automotive, Inc.

In alignment with the goals to reduce fuel consumption and emissions, Fisker Automotive encourages correlating credits and deficits to a metric that reflects this directly—fuel savings. The proposed regulation currently reads,

"The amount of credit earned is determined by multiplying the number of tenths of a mpg by which a manufacturer exceeds a standard for a particular category of automobiles by the total volume of automobiles of that category manufactured by the manufacturer for a given model year.' [OAR-2009-0472-8732.1, p.2]

MPG is the inverse of consumption: as consumption approaches zero, MPG approaches infinity. This opens a window for automakers to game the regulation. Conceivably, an automaker could sell a PHEV with a large electric range to achieve hundreds of MPG and earn thousands of credits. This would then allow the automaker to offset hundreds of vehicles that fail to meet

baseline requirements. This counters the regulation goals. Figure 1 below illustrates the problem. We compare credits earned to fuel savings for a base requirement of 30.2 mpg (average passenger car requirement in 2011). [OAR-2009-0472-8732.1, p.2] [See Docket Number OAR-2009-0472-8732.1, pp.2-4 for more detailed discussion on this issue]

Ford Motor Company

Advanced Technology Vehicle Credit

To promote the research, development and manufacture of advanced technology vehicles, Ford supports the use of a volume multiplier of 2.0 for all electric vehicles (EVs), plug-in electric vehicles (PHEVs), and fuel cell vehicles for 2012 - 2016 model years. Also, putting EVs into the CO2 calculation at 0 grams/mile is appropriate to support the introduction of new technology in the marketplace. The proposed phase-down or discounting of the volume multiplier for this rulemaking is not appropriate. Once consumers have accepted the advanced technology and there is adequate volume in the market, minimum 10% volume, Ford believes it would then be appropriate to differentiate between EVs and PHEVs for advanced technology credits. Both types of technologies are capable of relatively wide ranges of petroleum or CO2 displacement over the life of the vehicle. The different operating characteristics, including climate sensitivity, and projected miles travelled would also be factors for differentiating and applying appropriate credits. [OAR-2009-0472-7082.1, p. 8]

Glasser, Mark

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283 p.204-205]

And my major concern with these credits, these carbon credits, that these are not allowed to so dilute the real meaning of what you're doing here and what we're doing here because electric cars do -- just like Lucas picked up, they have a carbon imprint, and that needs to be adjusted to, you know, automakers that are coming out with wonderful electric vehicles. But to have them say that there's no imprint, I think, is really going to dilute the power of the bill and -- or the legislation that you're doing.

And to me, the most important thing is that we don't let those credits really become a way to easily avoid the intent of what you are trying to do and what we all need to be done

Honda Motor Company

EPA proposes to set the upstream portion of EVs, PHEVs and FCEVs to zero grams/mile. EPA requests comments on this approach. Honda believes that EPA should separate incentives and credits from the measurement of emissions. Honda believes that without accounting for the upstream emissions of all fuels, inaccurate comparisons between technologies will take place. Relying upon EPA's regulation, policy makers – in the U.S. and around the world – may make unfavorable technology comparisons and set misdirected policies as a result. [NHTSA-2009-0059-0095.1, p.2]

A compelling example exists. According to DOE's GREET model, the upstream emissions of a Toyota Prius are 46 grams/mile, and the tailpipe emissions are 198 grams/mile, for a total of 244 grams/mile. By contrast, the GREET model estimates the average upstream emissions of a comparably sized Battery Electric Vehicle (BEV) are 256 grams/mile. Without commenting on the merits of creating incentives for electric vehicles, it is clear that zero grams/mile for the BEV would lead one to believe that BEVs have a clearly superior greenhouse gas profile compared to similarly sized hybrid gasoline vehicles. [NHTSA-2009-0059-0095.1, pp.2-3]

EPA's regulations need to be comprehensive and transparent. By zeroing out the upstream emissions, EPA is conflating incentives and credits with emission accounting. In discussions with EPA staff, the question of "double counting" arose. This argument points out that electric power generation is under its own regulations, and including the upstream emissions in this regulation would result in "double counting." Honda observes that upstream emissions are necessarily correlated with the intensity-based emissions regulation of light duty automobiles. In the case of petroleum refineries, significant increases in fuel economy on the part of automobile manufacturers could result in a "windfall" for the refineries' if their tonnage caps were not adjusted accordingly. These two arguments suggest that not only the upstream emissions of electricity but the upstream emissions of all fuels ought to be included in EPA's regulation. [NHTSA-2009-0059-0095.1, p.3]

EPA could take two different approaches to the upstream issues: 1) All greenhouse gas targets could be increased to reflect the upstream emissions of gasoline, or 2) set all greenhouse gas standards based on gasoline-fueled vehicles and then adjust all other fuels to use a credit for the comparable upstream gasoline-fuel. Honda recommends the latter approach, simply because of the wide communication of the 2016 goals set by EPA of 250 grams/mile. According to the GREET model, referenced above, the upstream emissions of the gasoline fuel are equivalent to 23% of the gasoline vehicle's tailpipe emissions. [NHTSA-2009-0059-0095.1, p.3]

Advanced Technology Vehicles Credits

In Section III, EPA requests comment on their proposed "multiplier" for EVs, PHEVs and FCEVs. Comment is requested on three aspects of this incentive, including: a) the level of the multiplier, b) on how the multiplier might differentiate various technologies, and c) on the timing and rate of phasing out the multiplier. [NHTSA-2009-0059-0095.1, p.4]

Honda supports introduction of a multiplier. As we project much more stringent standards in the not-too-distant future, it is beneficial, yet extraordinarily expensive, for OEMs to bring more advanced technology to market. The early introduction of technology has the salient benefit of helping to mature the technology in small volumes before it is required in large volumes to meet future regulations. The forecasted stringency by some policy makers (not the least of which includes California's Air Resources Board, "CARB") for the next ten to twenty years is staggering. Considering this, incentives that strictly follow the greenhouse gas benefits miss a larger point. Advanced Technologies are usually costly and uncertain; encouraging all technologies, at this early stage is helpful. [NHTSA-2009-0059-0095.1, p.4]

EPA Response to Comments

Honda recommends that the multiplier differentiates between more and less advanced technology. For example, a BEV with a 50 mile range is significantly less advanced than a 100 mile range BEV. Honda proposes a formula for establishing the relative multiplier for PHEV, BEV and FCEVs:

((EAER / 40) x Quick Refueling Multiplier) + 1

EAER is the all electric or equivalent all electric range of the PHEV, BEV or FCEVs

Quick Refueling Multiplier has two values: 1 for vehicles with no quick fueling capability (defined as being capable of replacing 95% of the vehicles range in ≤ 15 minutes, the same definition used by CARB in its ZEV Regulation) and 2 for vehicles capable of quick fueling.

Examples:

A 40 mile EAER (or AER) PHEV 40/40 x 1 + 1 = 2.0

A 100 mile AER BEV 100/40 x 1 + 1 = 3.5

A 300 mile Range FCEV 300/40 x 2 + 1 = 16.0 [NHTSA-2009-0059-0095.1, p.4]

These values are greater than those initially envisioned by EPA (between 1.2 and 2.0), however, the greater values are essential if EPA is determined to truly incentivize these costly, advanced technologies. Further, Honda does not believe the multiplier should phase out before 2016. The transition to advanced technologies will take many years, and OEMs do not expect the costs associated with these vehicles to be reduced dramatically by 2016. [NHTSA-2009-0059-0095.1, p.5]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.96-103]

First, the zero-grams-per-mile CO2 for electric vehicles. EPA proposes to set the CO2 value for the electric portion of plug-in electric vehicles and battery electric vehicles to zero, and EPA further proposes to set the CO2 value for fuel cell electric vehicles to zero as well.

Honda believes that this policy is misguided and creates significant incorrect perceptions about the relative merits of various vehicle technologies. Honda has worked on alternative fuel vehicle technologies and their social benefits for more than two decades, but the social benefits of any technology must be understood and measured on a well-to-wheel basis.

It is clear that there are no special virtues to be associated with zero tailpipe greenhouse gas emissions if the well-to-tank portion is very high.

Additionally, without a comprehensive well-to-wheel assessment of greenhouse gases, EPA and others who rely upon EPA's assessments will improperly favor or signal preferred technologies. If the agencies want to promote electric vehicles, it can do so through Super Credits as we discuss below.

Super Credits. We understand and support EPA's effort to encourage the introduction of plug-in hybrid electric vehicles, battery electric vehicles, and fuel cell electric vehicles. However, these technologies do not necessarily warrant the same credit multiplier solely because they qualify as one of these technologies.

There's a great deal of difference between a 50-mile battery electric vehicle and a 100-mile battery electric vehicle for example. And fuel cell electric vehicles represent significantly more challenging technology sets.

In order to achieve our long-term social goals, it is important to recognize and reward more advanced and sophisticated technology. We are ready to work with EPA on developing an appropriate performance-based metric that will more accurately differentiate advanced technologies.

Honeywell Transportation Systems

EPA historically has developed regulations that establish hard emissions targets while providing the industry the flexibility to develop new technologies to meet its compliance obligations, without technology forcing. However, in its Proposed Rule EPA deviates from its traditional method of regulation and seeks to favor certain technologies. EPA proposes additional credit opportunities for certain technologies such as electric vehicles ('EV'), plug-in electric vehicles ('PHEV'), and fuel cell vehicles, including a multiplier in the range of 1.0 to 2.0 applied per vehicle sold. Honeywell believes that it is in the interest of better regulation and good governance not to force technology. While it supports EPA's proposal to phase out the multiplier after 2016, Honeywell also suggests that EPA phase out the proposed EV credits after 2016. As proposed, this credit program is inconsistent with EPA's historical practice of implementing emission control requirements in a manner that allows for technological flexibility. [OAR-2009-0472-7165.1, p.6]

Honeywell has two recommendations to ensure that the EV credit allocation adopted reflects the real world operating conditions of PHEV s and results in actual reductions in CO2 emissions. First, in order to meet EPA's GHG emission reduction goals, it is critical to account for the emissions involved with generating the electricity used to charge the EVs. Applying upstream emissions to EV or to the plug-in portion of PHEV will ensure actual GHG emissions targets are met, as proposed by the California Air Resource Board ('CARB'). This will ensure that carbon dioxide emission reductions are achieved, rather than merely being transferred from one source to another excluded source. [OAR-2009-0472-7165.1, pp.6-7]

Next, Honeywell suggests that EPA establish a mechanism based on best available science to verify that the plug-in capability of PHEV s is in fact utilized for those vehicles in order to earn commensurate credits. Verification will minimize the over-allocation and exploitation of credits by accurately determining the emissions associated with actual plug-in use. Preventing the over-allocation of credits is critical for EPA to meet its GHG reduction goals, especially if the credits are to be extended beyond 2016. [OAR-2009-0472-7165.1, p.7]

Hyundai Motor Company

EPA proposes a credit multiplier of 2.0 for advanced technologies, like plug-in hybrid electric vehicles (PHEV), electric vehicles (EV) and fuel cell vehicles (FCV). Hyundai supports the use of the multiplier but believes that the various advanced technology types (i.e. EV, PHEV, and FCV) should not receive an equally-valued credit multiplier. While we do not believe that the application of the credit multiplier should be overly complex, like California's method for applying ZEV credits by technology type with additional criteria such as battery power, range, etc., we do support a reasonable, unique credit multiplier for each specific technology. [OAR-2009-0472-7231.1, p.4]

International Council on Clean Transportation

EPA proposed to assign zero carbon emissions for electricity used by vehicles. The agency acknowledges that in reality CO2 emissions would be higher due to emissions from electric utility generation and that this is not an appropriate long-term approach. However, EPA sees a value in using zero carbon emissions as an interim solution in order to promote electric vehicles and asks for comments on this proposal.

ICCT recognizes that there is sound justification for providing a temporary incentive for electric vehicles in order to help them overcome market and infrastructure barriers. However, we are concerned that applying a zero carbon value for electric vehicles creates a loophole enabling OEMs to comply with the standards primarily by producing and offering a relatively small number of electric vehicles. This would allow manufacturers to either scale back the use of efficiency technology on the majority of their vehicles or to use the technology to enhance vehicle performance, putting manufacturers that did not offer electric vehicles at a competitive disadvantage and continuing the horsepower wars.

ICCT was founded around the Bellagio Principles, which were set forth by principal regulators around the world in 2001. This was a consensus document on preferred government policies for shaping the future of motor vehicle technology and transportation fuels worldwide. The second Bellagio principle states: "Base policies solely on performance compared to societal objectives, and not give special consideration to specific fuels, technologies, or vehicle types." In keeping with this principle, we recommend that the agencies include a realistic assessment of incremental upstream emissions from passenger vehicles.

The multiplier used for electric vehicles and plug-in hybrids for 2012 through 2015 already provides an incentive for electricity use. Funding and financial incentives offered by federal, state, and other governments provide additional incentives for electric vehicles. Thus, there is no need for an additional incentive, especially one that could distort the efficiency of the standards.

In the long run, it is important to address the issue of enormous regional differences in carbon from electricity generating power plants. For example, based on current electricity generation, electric cars would be a great idea for reducing CO2 emissions in France because of its heavy reliance on nuclear energy, but would not be so good in Germany because of the high percentage of coal use. Similar regional differences in carbon intensity exist from state to state in the US. It is important for EPA to address these differences when developing a sustainable policy on electricity use in vehicles. [OAR-2009-0472-7156.1, pp.12-14]

[ICCT also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 62-63.]

Investor Network on Climate Risk

I would like to raise one concern that could potentially undermine the effectiveness of the National Program and that other [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 152.] panelists have addressed today as well. Specifically, the proposed advanced technology credits for electric vehicles and plug-in hybrid electric vehicles. Unless such credits account for the greenhouse gas emissions resulting from electricity generation, greenhouse gas emissions from such vehicles are likely to be underestimated. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 153.]

Karplus, Valerie J.

I write to comment on the treatment of plug-in hybrid electric vehicles (PHEVs) and electric vehicles (EVs) in the proposed per mile CO2 emissions rule for light-duty vehicles. As currently written, the regulation has the potential to be both costly and ineffective, because it incorrectly omits electricity-related emissions from PHEVs and EVs, and weights their contribution more heavily towards meeting the regulatory target. These distortions could potentially lead to a worsening of total CO2 emissions relative to the projected baseline over the 2012 to 2016 compliance period (see attached file for detailed supporting information and calculations). The EPA should revise the rule to include the CO2 emissions from generating electric power used for vehicle propulsion. Even with the most aggressive targets for investment in renewable electricity sources, the emissions intensity of grid-supplied electricity will not fall substantially over the next 10 to 15 years, the period used to assess impact of the new regulation. A reasonable measure could be based on average (or the average marginal) national grid CO2 emissions per kilowatt-hour, adjusted for modest expected grid efficiency improvements over a vehicle's lifetime. Moreover, the time scales involved in any transition to low carbon vehicle and fuel technologies at scale may call for a longer time horizon for compliance (for example, 2020 or beyond), and perhaps also a more stringent target. In doing so, the EPA would allow time for carefully considered investment in development and adoption of technologies that would most cost-effectively lead to deep reductions in light-duty vehicle emissions. [OAR-2009-0472-7280, p. 1] [See OAR-2009-0472-7280.1 for a detailed discussion of this issue.]

Massachusetts Department of Environmental Protection

Massachusetts agrees that all-electric vehicles and plug-in hybrids are an important part of the strategy to reduce greenhouse gas emissions from the motor vehicle sector and that it is appropriate to provide incentives for this purpose. However, we have two primary concerns about EPA's proposal to give EVs a greenhouse gas (GHG) rating of zero emissions and to provide a credit multiplier.

(a) Lifecycle greenhouse gas analyses conducted by EPA and by the California Air Resources Board (CARB) have found that vehicles powered by electricity have substantially lower GHG emissions per mile traveled than gasoline fueled vehicles. However, these emissions are not zero,

and EPA should not count EVs as having zero emissions. Instead, EPA should use the best available science to estimate the upstream emissions from generation of electricity, and combine that with the greater efficiency of electric vehicles to obtain an appropriate value for those vehicles in grams of carbon per mile driven.

(b) Utilizing a multiplier to increase the weighting of EVs within the overall fleetwide MPG calculation for an automobile manufacturer should be done with great caution, and would preferably be based on an analysis of the incentives needed to achieve a level of acceptance where EVs can be sold in the market without incentives. The multiplier should be at the lower end of the range that EPA and NHTSA are considering, such as 1.2, rather than at the high end of 1.8. Allowing the use of a higher multiplier could result in a manufacturer with significant sales of EVs substantially increasing its fleetwide average GHG emissions and decreasing its miles per gallon (MPG). With a multiplier of 1.8, the average could be allowed to drop by perhaps 10 miles per gallon or more and increase C02 emissions greatly, depending on the number of EVs and the other characteristics of the fleet. This would be a disastrous result given the need to greatly reduce GHG emissions to achieve our shared climate goals. In addition, as EPA has discussed, any multiplier utilized should be designed to phase out over a few years, by around 2016, so that manufacturers do not develop a large stake in its continuance. [OAR-2009-0472-7195.1, pp.1-2]

Mercedes-Benz (Daimler AG)

DAG strongly supports the provision of credits in the EPA program for advanced powertrains. These credits supply needed public policy support for the commitment by DAG and others to produce more fuel efficient and lower emitting vehicles. DAG not only will be introducing into the United States market zero emission vehicles, such as the Mercedes Benz F-cell and a fully battery operated smart car, but also will continue to increase its offerings of other forward technologies, such as clean diesel vehicles and plug in hybrids. Public policy should favor not only fuel cells and batteries, but also the bridging technologies that can significantly reduce CO2 emissions in the short term while the marketplace for zero emission mobility develops.

EPA proposes advanced powertrain credits at a multiplier between 1.2 and 2.0 for full electric, plug in hybrid and fuel cell vehicles. EPA seeks comment on whether the multiplier should be the same for all advanced technologies or should be scaled and whether it should be phased down over time. DAG suggests that a multiplier be applicable to all advanced powertrain technologies in accordance with the amount of CO2 reductions they provide as compared to traditional gasoline internal combustion engines.

Specifically, DAG suggests a credit system as follows: (i) BEV and FCEV zero emission vehicles would receive a multiplier of 2.0; (ii) plug-in hybrids, range extenders and hydrogen-ICE vehicles would receive a multiplier of 1.8; (iii) electric hybrids with either diesel or gasoline would receive a multiplier of 1.5; and natural gas, clean diesels and vehicles with stratified direct injection gasoline would receive a multiplier of 1.2. This multiplier system both rewards manufacturers for investing in zero emission and far-forward technologies and also encourages manufacturers to increase the transformation of traditional products from pure gasoline-based powertrains to hybrids and diesels.

Pure zero emission vehicles should receive the maximum benefit and manufacturers should be encouraged to bring to market the most advanced technologies. Battery and hydrogen vehicles that are not zero emissions should receive the next most significant multiplier. The U.S. government currently encourages the marketing of clean diesels and hybrids through federal tax credits that expire in MY 2011. These vehicles continue to offer substantial benefits over traditional gasoline vehicles. While diesels produce more CO2 per gallon than gasoline engines, they produce less CO2 per mile than gasoline engines. The additional fuel economy of a diesel engine overcompensates, from a CO2 emissions standpoint, for the higher per gallon emission of CO2. Mercedes Benz diesel engines have up to an approximate 40% fuel economy advantage and an emissions benefit of up to 22% compared to their gasoline counterparts. In addition, EPA estimates an up to 26% CO2 reduction for light-duty diesels equipped with SCR. EPA should not allow support in the near term for these technologies to undercut their introduction. Rather, EPA should continue to encourage these technologies upon the expiration of the federal tax credits by providing them a multiplier of 1.5. A final category for natural gas, lean burn diesel and stratified direct injection gasoline vehicles would encourage their introduction, as the fuels for these vehicles become more available in the United States.

Also significant is that the multipliers be available at the same levels throughout the model years covered by this rulemaking. As EPA has stated, these model years constitute a transitional period into a CO2 regulatory regime. The deployment of both advancing and advanced powertrains is critical throughout this time frame. Scaling down credits previously available is more applicable to credit programs that are phasing out reliance on a particular technology, such as flex fuel vehicles, rather than those that are intended to encourage reliance and commercialization of the technologies under consideration. [OAR-2009-0472-7193.2, p.17]

Similarly, we hope that every vehicle we introduce will be an instant success, but experience shows that there are always inevitable growing pains. Our relative experience with clean diesels in the U.S. demonstrate [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, pp. 50.] that customers need time and added incentives to widely adopt new technology. Our company, like several others, plans to soon introduce a limited quantity of battery electric vehicles and hydrogen fuel cell vehicles into the U.S. market. The advanced vehicle technology credits are critical incentive for early introduction of these vehicles by all manufacturers during this critical final proving stage. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, p. 51]

Mitsubishi Motors R & D of America (MRDA)

Mitsubishi Motors supports the advanced technology vehicle multiplier and zero gram/mile CO2 emission level for battery electric vehicles (BEVs). These important regulatory mechanisms provide significant temporary support as Automakers begin to commercialize advanced technology vehicles. [OAR-2009-0472-7125.1, p.2]

Mitsubishi Motors supports the availability of advanced technology vehicle (ATV) credits. The proposed 2.0 multiplier and zero gram/mile CO2 emission level for battery electric vehicles (BEVs) help justify the capital investment needed for this technology. These regulatory

mechanisms will also promote ATV introduction into the market. These measures incentivize the effort needed to build infrastructure for these vehicles – the infrastructure will create the sustainable market. [OAR-2009-0472-7125.1, p.2]

Considering the challenges facing ATV introduction, it is apparent that the proposed 2.0 multiplier is needed beyond MY 2012. It would be more beneficial to maintain a 2.0 credit multiplier until ATV sales reach 10% of the annual fleet sales volume. The true environmental benefits of ATVs are unlikely to be measurable before this penetration level – this is an investment in only near term technology that can provide significant long term GHG reductions. If this approach is not palatable, another approach to encourage the production of ATVs would be to allow each manufacturer to have their own 2.0 multiplier and associated phase-in period as each manufacturer introduces ATVs. It maintains credits for OEMs, who are only able to develop ATVs later and will need ATVs to be competitive in the future. [OAR-2009-0472-7125.1, p.2]

By extending the 2.0 multiplier, it will make ATV costs more reasonable and further promote these technologies. While building ATVs is the responsibility of the automotive industry, it takes more than just ATV production for true emissions reductions from ATVs to be realized. It is necessary to have fueling and service infrastructure to support and sustain these technologies. No one would purchase ATVs if they can neither fuel them nor have them repaired. Developing and establishing this infrastructure for the nation will take a lot of time, far more than a single year or even the time frame outlined within this regulation. [OAR-2009-0472-7125.1, p.2]

Once ATVs are sustainably commercialized, we believe it is appropriate to differentiate highly developed, efficient ATVs with an efficiency factor. This factor should be based on demonstrated vehicle performance as measured on the FTP and highway test cycles. [OAR-2009-0472-7125.1, p.3]

Some parties desire to assign electric power generation emissions to the vehicle – this is unprecedented and introduces an artificial burden on this emerging technology. Historically, fuel production ("well-to-tank") emissions were never assigned to the vehicle utilizing the fuel. Vehicle emissions are currently measured and regulated by the amount of compounds directly emitted by the vehicle. Obviously, BEVs do not emit CO2, therefore the proposed zero g/mile emission level is appropriate. [OAR-2009-0472-7125.1, p.3]

Additionally, Congress has provided consumers with tax credits to encourage their purchase of ATVs. The reason behind these tax credits are to offset the additional cost of purchasing an ATV and are justified by the environmental benefit each ATV provides. The same reasoning holds true for Automakers, since each ATV is very expensive and Automakers need the additional credits to help offset the expense, especially given the ultimate size of the ATV market is uncertain. [OAR-2009-0472-7125.1, p.3]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.85-87]

Another opportunity for technological and environmental progress is the advanced technology vehicle credits, both the zero grams per mile emissions rate and the multiplier. These

measures will make the near-term advanced technology vehicles more cost-effective and promote these technologies in the U.S. market.

Also, please remember advanced technology vehicles will only be successful with the construction of their fueling infrastructure.

Motor and Equipment Manufacturers Association

Lastly, regarding EPA's request for comment on advanced technology vehicle credits for electric vehicles, plug-in hybrids, and fuel cells, MEMA supports the additional credits proposed. Also, we support the assignment of zero gm/mile CO2 emissions for electric vehicles and plug-in hybrid vehicles when operating in the all electric mode, and fuel cell vehicles for early credits and for the 2012-2016 timeframe. [OAR-2009-0472-7121.1, p.6]

[See Docket [OAR-2009-0472-7121.1, pp.5-6 for detailed comments on Hybrid and Electrification/Accessory Technologies]

National Association of Clean Air Agencies (NACAA)

NACAA would also like to take this opportunity to offer comments on several other issues related to this proposal. First, NACAA supports the concept of providing credits for the production of advanced vehicles to incentivize full commercialization of electric drive technologies, such as battery electric and fuel cell vehicles. We urge, however, that EPA assign a national average upstream emissions factor to each advanced technology (taking into account the lifecycle emissions of the vehicle system), rather than assuming zero grams per mile CO2 for all electric-powered vehicles, which could significantly and inappropriately erode the actual GHG emissions reductions to be achieved by the national program. We note that there are various studies available – including ones conducted by the California Air Resources Board, MIT, Argonne/GREET, the University of California-Davis and the U.S. Department of Energy – that can be used to estimate national average upstream CO2 emissions for emerging electric drive and fuel cell vehicles. [OAR-2009-0472-7071.1, p.3]

National Automobile Dealers Association (NADA)

ATV credits are a cornerstone to incentivizing the introduction of cutting edge and often very expensive technologies. Such credits should be technology-neutral and should be set at a multiplier level generous enough and be available long enough to serve as a successful incentive. In all likelihood, this may mean making such credits available beyond MY 2016. This is particularly critical given that ATVs do not involve a simple "if you build it they will come" proposition. Their successful introduction will require huge investments in refueling and service infrastructure. For dealerships, this will mean new service and repair tools, parts inventories, technician training, service information, and possibly new on-site refueling infrastructure. Extensive new customer point-of-sale education and support likely will require a focus on at home or business refueling options. On this latter point, the National Program should include credits for manufacturers who market through their dealers the advanced technology home or

business refueling systems that may be needed for some of these vehicles. [OAR-2009-0472-7182.1, p.8]

The proposal doesn't and shouldn't take into account upstream GHG emissions for electric propulsion, just as it doesn't and shouldn't do so for other propulsion systems/fuels. If and when Congress decides to regulate upstream GHG emissions, it will do so. [OAR-2009-0472-7182.1, p.8]

Natural Resources Defense Council

Treating Advanced Technology Vehicles as "Zero" Emissions Undermines Pollution and Technology Benefits of Program

NRDC believes the emission scoring for all vehicles should be based on their true full fuel cycle emission impacts. EPA has proposed to assign electric-drive vehicles, such as plug-in hybrid electric vehicles, battery electric vehicles and hydrogen fuel cell vehicles, an emissions rate of 0 gCO2/mi. However, in reality these vehicles have non-zero emissions rates due to the upstream production and transmission of their fuel source, electricity or hydrogen. As discussed in more detail below, EPA should specify an upstream emissions factor for these fuels to be used for calculating their GHG emissions compliance value. The upstream emissions factor should be multiplied by a vehicle's efficiency to determine its emissions per mile.

EPA's proposal that electric-drive vehicles be treated as "zero emissions" and given credit multipliers of up to two-fold will undermine the emission benefits of the program and will have the unintended consequence of slowing the deployment of conventional cleaner vehicle emission reduction technologies into the fleet.

To illustrate our concerns, we estimate the impact of the EPA proposal on Nissan's compliance strategy. Nissan has indicated that they could produce at least 100,000 Leaf electric cars annually by MY 2016, which is about 10 percent of their expected overall car sales. If the EVs are assigned a 0 g/mi emission rate and a 2.0 multiplier, we estimate that the Nissan's gasoline car fleet would average about 8 mpg lower fuel economy than if Nissan did not produce any EVs, about 31.5 vs. 39.5 mpg. That is, Nissan would have to do very little, if anything to improve the performance of their gasoline-powered car fleet from today's levels.

An electric-drive vehicle's emissions compliance value (in gCO2/mile) should be calculated as the product of that vehicle's individual efficiency (in kWh/mile) measured during compliance testing and a national grid emissions factor (in gCO2e/kWh), which would be specified by EPA for each model year. For plug-in hybrid electric vehicles, which use a combination of electricity and gasoline fuel, the emission rate should be a weighted average of the electric miles emissions rate and gasoline miles emissions rate using an electric-drive utility factor.

The grid-electricity greenhouse gas emissions factor (in gCO2e/kWh) should be based on the marginal emissions of electricity generation and delivery to support vehicle charging.
The emissions factor should include both CO2 and non-CO2 GHGs from all steps in the electricity production and delivery chain from primary fuel extraction to electricity transmission

and vehicle charging for end users. To the extent practical, EPA should incorporate marginal emissions into the MY 2012-2016 rule, using the best available public data on electricity emissions. Future rulemakings should leverage a well developed, transparent analytical framework for marginal emissions.

Using the framework, the EPA should provide near- and medium-term estimates of grid emission factors in a way that both enables stakeholders to estimate the emissions impacts of fleets of plug-in vehicles and provides automakers with a clear indication of how electric-drive vehicles in future model years can contribute to standards compliance. If policies are adopted that will change electricity emissions factors, then EPA should update the emissions factors after public notice and review.

Once the annual electricity grid emission factors on a national or regional basis are determined, EPA should calculate a grid emissions factor (again in gCO2e/kWh) that can be applied to specific vehicle model years. A vehicle's emissions scoring will be the product of the grid emissions factor assigned to that vehicle model year and the vehicle efficiency. The model year values would be the average of the annual electricity grid emission factors (calculated above) over the years that comprise the bulk of the operational years for the model years in question. The averaging to calculate the model year grid factor should include weighting toward the in the earlier years of a model year's operation due to typical scrappage and VMT degradation that will reduce electricity use by that model year over time.

NRDC recommends setting the model year grid factor in five-model-year p. The five model-year set value would then be the compliance grid emission factor for all the vehicles within those five model years. The specification of a grid emissions factor for a set of model years is preferred over an individual factor for each model year because it will discourage manufacturers from delaying the introduction of an advanced vehicle by a year or two to take advantage of a lower grid emissions factor under a situation where the grid is cleaning up rapidly.

Below is an illustrative example of how the emission scoring would be calculated for a vehicle once the grid emissions factor for the model year has been determined. The calculation results in a scoring of 147 gCO2/mi for an electric vehicle such as the Nissan Leaf. While not zero, the vehicle's emissions rate is 67 grams lower than the MY 2016 value for a vehicle of similar footprint, which could continue to provide a significant incentive for automakers to build the vehicle.

Example of Electric Drive Vehicle Emissions Scoring (Note: all values are for illustrative purposes only)

The equation that describes the overall calculation is:

Emission Rate (gCO2/mi) = Model Year Grid Emissions Factor (gCO2e/kWh) * Adjusted Vehicle Efficiency (kWh/mi) – Upstream Gasoline Emissions Adjustment

Three major steps are necessary to determine the values for the equation:

EPA Response to Comments

1. Model Year Grid Emissions Factor is set for all vehicles in a five-model-year block. Calculating the grid emissions factor for the model years involves a series of analyses as described previously in this section. For simplicity, we assume a value for the set of model-years based on the marginal electricity generation for charging those vehicles that is 50 percent from coal plants and 50 percent from natural gas plants. Under this assumption, the Model Year Grid Emissions Factor is 790 gCO2e/kWh.

2. Adjusted Vehicle Efficiency is determined by first stating with the efficiency rating over the same 2-cycle Federal Test Procedure (FTP) used to test conventional vehicles. For our illustrative calculation, we use 0.224 kWh/mi to approximate the Nissan Leaf expected performance. The FTP value is then corrected upward to account for electricity losses that occur from converting the AC wall outlet electricity to DC for charging the vehicle battery. We assume 88 percent conversion efficiency to get a vehicle and charging efficiency of 0.254 kWh/mi. Multiplying by the grid emissions factor of Step 1 results in 201 gCO2/mi.

3. To enable a fair comparison to gasoline vehicles, a final adjustment is necessary to remove the equivalent of the upstream gasoline emissions that are not included in the compliance calculation for the National Program standards. Upstream emissions are estimated by EPA to be 19,102 gCO2e/Mbtu of gasoline. Using the energy content of gasoline and the fuel economy of a gasoline vehicle with a similar footprint to the Leaf, about 41.4 in MY 2016, we calculate the upstream adjustment to be 54 gCO2e/mi. The final vehicle efficiency value is the difference from Step 2 above and 54 gCO2e/mi, or 147 gCO2/mi.

Example EV = 790 gCO2e/kWh * 0.254 kWh/mi – 54 gCO2e/mi = 147 gCO2/mi

For comparison, a conventional MY 2016 gasoline vehicle of the same footprint would have a compliance standard of 214 gCO2/mi, 46 percent higher than the example EV.

For hydrogen fuel cell and hydrogen internal combustion engine vehicles, EPA should supply a fuel production emissions value, in gCO2e/kgH2, following a methodology analogous to that of electricity. To determine the vehicle compliance emissions rate (in gCO2/mi), the hydrogen production emissions factor would be multiplied by the vehicle propulsion efficiency measured in kgH2/mi.

Advanced Vehicle Technology Multiplier Should Be No Higher than 1.2 to Prevent Slowing Adoption of GHG Reduction Technologies in Conventional Vehicles

To avoid an on-going unintended consequence of slowing conventional technology advancements in this rule and future rules, NRDC recommends multiplier values for advanced technology vehicles of 1.2. The agency should gradually phase-out the multiplier prior to MY 2017. Phasing-out the multiplier should not pose a challenge for automakers since as EPA's technical assessment demonstrates, compliance to the fleet average standards can be achieved using conventional technologies.

In the Notice of Proposed Rulemaking (NPRM), EPA expresses a desire to encourage the introduction of electric-drive vehicles through the use of multiplier credits. Multiplier credits,

however, should not undermine needed advancements in conventional vehicles that serve the vast majority of the market. If set too large, the multiplier could actually result in fewer GHG reductions than are projected from the National Program met solely by conventional vehicle technology because the credits earned by a small number of advanced technology vehicles could meet a large portion of a manufacturer's GHG reduction obligation and void the need for emissions reduction technology across a manufacturer's broader fleet. [OAR-2009-0472-7141.1, p. 13-18; footnotes deleted]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, p. 23.]]

NRDC believes that the emissions scoring for all vehicles should be based on their true full fuel cycle emissions impact. Electric vehicles such as plug-in hybrid electric vehicles, battery electric vehicles, and hydrogen fuel cell vehicles have in reality non-zero emissions rate due to the upstream production and transmission of their fuel source electricity or hydrogen.

For electric, we would recommend that the emissions scoring should be based on the vehicle's specific efficiency test results in kilowatt hours per mile multiplied by a national grid emissions factor in grams of CO2 per kilowatt.

For plug-in hybrid electric vehicles which use a combination of electricity and gasoline fuel, the emissions rate should be a weighted average of the electric miles emissions rate and the gasoline miles emissions rate using an electric drive utility factor.

A similar approach should be applied to hydrogen fuel cell vehicles and hydrogen internal combustion engine vehicles with a grams of CO2 per kilogram hydrogen factor applied to the propulsion efficiency.

New York State Department of Environmental Conservation

Electric Vehicles

EPA proposes to give credit to electric vehicles, plug-in hybrids, and fuel cell vehicles through several mechanisms. First, through 2016, these vehicles would be counted as two vehicles (but their emissions would be only counted once). Second, EPA proposes to assume that electric operation emissions are 0 grams/mile. [OAR-2009-0472-7454, p.3]

We recognize the desire and need to create incentives to support deployment of advanced technology vehicles, and accept that crediting mechanisms such as those proposed are one means to do so. We are concerned, however, that if left unconstrained, this mechanism could permit less development of low-emitting vehicles in other portions of the fleet as electric vehicles become more widespread. It is therefore important that EPA revisit the crediting mechanism as advanced vehicle technologies mature. [OAR-2009-0472-7454, p.3]

EPA's use of the multiplier and the decision to assume that electric vehicles have zero GHG emissions are policy decisions made by EPA in order to facilitate the development of electric

vehicles. Given the current make-up of the nation's electric grid, the use of electric vehicles will result in upstream emissions from power plants that the federal government should address through other means, such as a national cap-and-trade program for carbon emissions. In the long term, the federal government should seek to implement policies that reduce the power sector's reliance on fossil fuels and enable the full emission reduction potential of electric vehicles to be realized. As this program evolves, EPA should strive to utilize the best science and data available, including calculations of upstream emissions from production of electricity and hydrogen (or other advanced fuels) and realistic energy storage and utilization rates. [OAR-2009-0472-7454, p.3]

New York University School of Law, Institute for Policy Integrity (IPI)

Electric Vehicles

EPA proposes providing incentives for automobile manufacturers to produce more electric vehicles. The structure of this incentive is to assign those vehicles zero carbon emissions and also to multiply their weight (counting them as 1.2 to 2.0 cars) during fleet averaging. EPA should reconsider this approach. First, EPA itself recognizes that these electric vehicles do not have a zero carbon emissions value: electric vehicles run on energy from an electric grid, and producing this electricity emits carbon. EPA's proposal does not account for these emissions. In contrast, California's standards assign electric vehicles a carbon emissions value of 130 g/mi—the average amount of GHGs emitted by the California grid to charge the battery and to construct the car. EPA should pursue a similar policy—either by assigning all electric vehicles the average amount of GHGs emitted by use of electricity across the country's grid, or by requiring manufacturers to report the specific average amount of GHGs emitted for each electric vehicle model. [OAR-2009-0472-7232.3, p. 17]

Second, by counting each electric vehicle as up to two vehicles when averaging, EPA's proposal actually increases the amount of GHG emissions emitted from motor vehicles. For example, suppose a manufacturer's 2016 fleet is comprised of 100 electric cars that emit 130 g/mi of carbon and 200 standard cars that emit 300g/mi of carbon (more than the 2016 carbon grams per mile standard). After accounting for electric cars as zero and doubling them, the manufacturer's average would be 150 g/mi, well under EPA's standard of 205 g/mi of carbon. However, that fleet is actually emitting closer to 243 g/mi of carbon—which is over EPA's standards and allows for much more GHG emission. Under the credit and trading system, however, the manufacturer will be granted credits. It can then sell these credits to another manufacturer with a fleet with GHG emissions above the limit—therefore allowing for increased GHG emissions not only from the first manufacturer's fleet but also from the second manufacture's fleet. [OAR-2009-0472-7232.3, pp. 17-18]

Moreover, through this system, as more manufacturers produce electric cars, the total amount of GHG emissions from motor vehicles will increase. The more electric cars produced (and counted as zero emissions and doubled in weight during averaging), the more GHG emissions will be allowed from other cars, fleets, and manufacturers. In essence, EPA's program allows for a triple undercounting of GHG emissions—once by not accounting for emissions from electric cars, twice by counting electric cars more than once when averaging, and finally by allowing the

credits to be traded to other manufacturers—and allowing for increases in GHG emissions at every step. [OAR-2009-0472-7232.3, p. 18]

Finally, this proposal inexplicably subsidizes one form of GHG reducing technology (electric cars) over others. As explained, this form of subsidization actually allows for more GHGs to be emitted as more electric cars are produced. Any form of subsidization of new technology should be neutral with respect to GHG emissions—and it should definitely not contribute to their increase. Although it may be a valid policy goal to incentivize new technology, EPA should achieve this goal by providing grants and subsidies to manufacturers and scientists exploring all promising GHG reducing technologies. By giving inflated regulatory incentives to a certain type of technology rather than allowing manufacturers to find the most efficient and effective solution, EPA will disincentivize other forms of technology that may be more cost-effective at reducing GHG emissions. Moreover, by attempting to subsidize technology through use of the averaging and trading system, EPA undervalues the real GHG emissions of manufacturers' fleets and distorts interferes with the GHG reduction benefits of the rule. [OAR-2009-0472-7232.3, p. 18]

Nissan North America

Nissan strongly endorses EPA's proposal to measure the carbon emissions value of the electric portion of vehicles at zero grams per mile for the model years covered by this rulemaking.

Not only is EPA's proposal the best policy decision to promote EV deployment, it is also legally required. EPA and NHTSA have chosen to utilize the current federal test procedure for measuring fuel economy in vehicles. Significantly, those procedures were designed to measure the tailpipe emissions from internal combustion engines and provide for electric vehicles to be assigned a measure according to a petroleum equivalency factor. The testing and calculation procedures to be used in the CAFE and GHG programs do not account for upstream emissions in the production, refining, or delivery of petroleum to vehicles operating on petroleum.

There is no rational basis for EPA to discriminate in the regulatory program based on the form of fuel used, especially when doing so would detract from the very public policy EPA has endorsed. Were EPA to account for upstream CO2 emissions for electric vehicles and not do so for vehicles using other forms of propulsion, EPA would be discriminating between regulated products and would also be discriminating between regulated parties by virtue of the technologies and strategies they have chosen to comply with the regulatory requirements.

EPA has properly, from both a policy and a legal perspective, proposed to treat all vehicles equally by accounting for CO2 tailpipe emissions alone. [OAR-2009-0472-6798.1, pp. 3-4]

Finally, as noted above, Nissan endorses the policy of promoting advanced vehicles based on battery and fuel cell technologies. Consistent with focusing on tailpipe emissions and encouraging the most advanced technologies to eliminate tailpipe CO2 emissions, Nissan suggests that the advanced technology vehicle credits be structured to recognize zero emission vehicles from those that have some tailpipe emissions. Accordingly, Nissan suggests that full

battery electric and fuel cell vehicles be provided a maximum multiplier with plug-in hybrid vehicles provided a significant but lower multiplier. [OAR-2009-0472-6798.1, p.6]

Northeast States for Coordinated Air Use Management

EPA has proposed to allow manufacturers to receive additional credits for the placement of advanced technology vehicles, including pure electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles. NESCAUM is concerned that the preferential crediting proposed by EPA may be too generous by assuming a zero (0) grams per mile CO2 equivalent for vehicles powered by electricity. While we strongly support incentives for the introduction of advanced technology vehicles, we are concerned that the magnitude of credits being offered for these vehicles may unnecessarily weaken the overall effectiveness of the proposed standards. We encourage EPA to re-evaluate its advanced technology vehicle credits to ensure an appropriate level of credit is provided by considering the whole vehicle, e.g., vehicle technology and fuel system. A number of studies are available to assist the agency in developing assumptions for the CO2 resulting from electricity generation as are models (such as GREET) to estimate upstream emissions.

With regard to the multiplier EPA has proposed for advanced technology vehicles, NESCAUM urges the agencies to establish a multiplier at the lower end of the range proposed in this rulemaking. A multiplier of 2.0 could result in erosion of the GHG standards and fleet average GHG emissions significantly greater than 250 grams per mile. A multiplier on the low end of what EPA has proposed and ramping down to 1 by 2016 could provide incentives for manufacturers to place electric vehicles but would pose less of a risk of eroding the overall standards than will the higher multiplier. [OAR-2009-0472-7235.1, p.5]

Physicians for Social Responsibility, Los Angeles

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.79-85]

Additionally, EPA should reconsider its credit multiplier of two proposed for these vehicles as proposed. A manufacturer could accrue significant credits with electric vehicles but then do little to improve the rest of its fleet. This is not adequate to protect public health.

Public Citizen and Safe Climate Campaign

EPA's proposed credits for advanced technology vehicles such as plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (EVs) must reflect real environmental benefits, must not be overly generous, and should be worth no more than the real world greenhouse gas reductions. EPA proposes to give credits for these vehicles by applying a multiplier which could range between 1.2 and 2, while valuing the EVs as having 0 gCO2/mi, and assigning PHEVs 0 gCO2/mi, for the "electric portion" of operation. Part of EPA's motivation in offering this credit is to encourage manufacturers to produce these vehicles. But efforts to encourage production should not undermine the fundamental goal of reducing greenhouse gas emissions. There are other, better incentives for automakers to build these vehicles, and many of the major automakers

have already announced plans to offer PHEVs and EVs. Some analysts project that more models will be offered that plug-in than hybrid electric vehicles in 2011. [OAR-2009-0472-7050.1, p.5]

Based on publicly-announced plans for introducing EVs and PHEVs into the vehicle fleet, the 0 gCO2/mi valuation of electric operation, combined with a multiplier of 2 could offset a manufacturers' compliance burden by as much as half, in the case of Nissan's Leaf EV, to a third for GM's Volt PHEV. EPA acknowledges that the real greenhouse gas impact of EVs is not zero, and therefore, providing such a large volume of credits could actually result in greater greenhouse gas emissions from gasoline vehicles than if these vehicles were not introduced into the fleet. EPA should not establish a regime in which efforts to encourage production of EVs and PHEVs undermine the overarching goals of improving fuel economy and reducing greenhouse gas emissions. [OAR-2009-0472-7050.1, p.5]

If EPA applies a multiplier for these vehicles, we suggest that it should not be higher than 1.2 times the greenhouse gas emissions associated with a vehicle, and that it should phase out over the course of the program. A multiplier that phases out by 2016 retains the incentive to introduce EVs and PHEVs with less diminution of compliance with the standards. Phasing out the multiplier sends a signal to the industry that these credits will not continue into the standards for model year 2017 and beyond. This is appropriate given that these vehicles, while considered "advanced" today, would not be considered advanced a few years from now, when the next round of standards is being considered. To the extent that these credits entice manufacturers to build these vehicles sooner, phasing out the credits would also encourage manufacturers to build more of these vehicles earlier in the program to capture the greatest value of credits. [OAR-2009-0472-7050.1, p.5]

EPA should include in its final rule some more detailed discussion of its intent to update its fuel economy labeling program to include estimates of mpg equivalents for EVs and PHEVs. While we [OAR-2009-0472-7050.1, p.5] appreciate that EPA is currently working on this proposal, we urge that the agency make some mention of its thought process in this matter. The automakers have already made public claims about expected mpg equivalents for EVs and PHEVs. If EPA is silent on this matter, then the public message is that the claims made by the industry are correct. [OAR-2009-0472-7050.1, p.6]

We urge that EPA develop a means for estimating full fuel cycle emissions, including upstream emissions from electricity production for EVs and PHEVs. Emissions for electric vehicles for compliance accounting should be measured by multiplying vehicle efficiency (kWh/mi) by a grid emission factor (gCO2/kWh), yielding emissions in gCO2/mi. The grid emissions factor should be applied on a state or regional basis to vehicles in the states in which they are first sold. This would account for differences in greenhouse gas intensity of electric power generation in different parts of the country. It would also encourage deployment of these vehicles in the regions where they will provide the biggest decrease in greenhouse gas emissions. EPA should publish state or regional greenhouse gas emission factors for multiple model years, and the agency should provide an opportunity for public comment on the emission factors. This will permit automakers to plan for compliance taking into account the emissions of EVs and PHEVs. [OAR-2009-0472-7050.1, p.6]

The EPA should develop a similar methodology for estimating the upstream fuel emissions component for hydrogen fuel cell and hydrogen combustion vehicles. A fuel emission factor must be estimated in gCO2/kgH2. The hydrogen emission factor should take a weighted average for different production methods of hydrogen. Emissions from hydrogen fuel cell or combustion vehicles would be estimated by multiplying the vehicle efficiency in kgH2/mi by the emission factor. [OAR-2009-0472-7050.1, p.6]

SABIC Innovative Plastic

SABIC-IP strongly endorses the multipliers proposed for electric, plug-in hybrid and fuel cell vehicles. By encouraging the deployment of these vehicle types during the time frame covered by the rule, the multiplier also furthers the redirection of the vehicle fleet towards one fundamentally designed for lower emissions and better fuel economy. [OAR-2009-0472-7080.1, p.3]

Sierra Club

Electric Vehicle Compliance Value

Although battery electric vehicles do not emit greenhouse gases through a tailpipe when driving, electricity generated to power these vehicles does result in increased emissions. EPA acknowledges these upstream emissions in the proposed rule, stating: [OAR-2009-0472-7278.1, p.11]

"In reality the total emissions off-set relative to the typical gasoline or diesel powered vehicle is not zero, as there is a corresponding increase in upstream CO2 emissions due to an increase in the requirements for electric utility generation." [OAR-2009-0472-7278.1, p.11]

Instead of attempting to account for upstream emissions, EPA simply ignores them. As electric vehicle production and use are expanded, and in future rounds of standards, it is critical that EPA and NHTSA treat electric vehicles in an accurate manner and in away that does not undermine the integrity of the program. [OAR-2009-0472-7278.1, p.11]

In this rulemaking, EPA should derive a national grid emissions factor (in gCO2e/kWh) for each model year and combine that value with vehicle efficiency (in kWh/mile) to obtain a more accurate measure of each electric vehicle's performance. The national grid emissions factor should account for upstream emissions from the marginal electricity that is generated and delivered for vehicle charging. Additionally, EPA could use a regional approach for emissions from electricity generation; creating a system that will encourage electric vehicle sales in regions that have the cleanest grid and will have the greatest greenhouse gas reductions. While we are not proposing a certain value for grid emissions, we do believe that electric vehicles emit less pollution than average vehicles currently on the road. A recent report by American Solar Energy Society, sponsored by Sierra Club, estimated that on average, electric vehicles emit 42% less greenhouse gases per mile than conventional vehicles, but emit more than a Toyota Prius. The emissions factor for electric vehicles cannot ignore emissions from generating electricity. This factor can be reduced over time as renewable electricity increases. If EPA finalizes a zero

emissions factor for EVs it will very difficult to set a different value for standards that apply in 2017 and beyond. [OAR-2009-0472-7278.1, p.11]

We are concerned that when combined with a compliance value of 0 grams/mile, advanced technology vehicle credits could allow automakers that produce a moderate number of electric vehicles to meet a significant portion of their compliance obligation in 2016 with advanced technology vehicle credits or accrue a significant amount of credits they can carry forward into the next round of standards. Several manufacturers, most notably Nissan, have announced plans to build and sell significant numbers of electric vehicles in the years covered by these proposed standards. These credits could enable manufacturers to produce less efficient (and more polluting) models in their fleets and slow the deployment of conventional technologies that can boost fuel economy and lower emissions now, when emissions reductions are most needed. EPA must ensure that all credits amount to real reductions – magnifying an unreal 0 emission value could undermine the program. [OAR-2009-0472-7278.1, p.12]

Further, advanced technology credits should not be available prior to 2012. Vehicles sold through 2011 were planned well before these proposed standards, and credits awarded prior to 2012 would be windfall credits. If EPA includes these credits in the final rule, we urge that advanced technology credits not be available for banking, carrying forward or carrying back. In a program designed to reduce greenhouse gas emissions, these credits do not represent actual emission reductions. Carrying forward advanced technology credits could slow technology adoption in the future, countering the intent of the credit. In sum, we oppose the use of an advanced technology vehicle multiplier. However, if EPA proposes a multiplier in the final rule, we urge that it start no higher than 1.2 in model year 2012, ramp down annually and phase out by 2016. EPA should be very clear that this multiplier will ramp down and not be continued in the next round of standards. [OAR-2009-0472-7278.1, p.12] [Sierra Club also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 28-29.]

We strongly urge EPA to address both the emission factor and multiplier in the final rule. We believe that EVs can be a critical part of a clean vehicle future, but we are concerned that the credits EPA proposes will taint these vehicles as automakers use credits to offset improvements in their gasoline vehicle fleets or sold to another automaker. Each EV will be associated with increased gasoline consumption or greenhouse gas emissions. These credits could be viewed much like credits under the CAFE program for flexible fuel vehicles (FFVs). Automakers apply FFV credits (up to 1.2 mpg) toward meeting CAFE standards and the program has been associated with increasing oil consumption. Finally, consumers will understand that electricity has emissions – a zero value will mislead consumers. Fixing these problems now will give EPA greater flexibility in setting standards for EVs in future years. [OAR-2009-0472-7278.1, p.12]

[The following comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 27-28]

The emissions associated with plug-in electric vehicles cannot be ignored. Although electric vehicles emit no global warming pollution while driving, producing the electricity to power them certainly does. Battery electric and plug- hybrid electric vehicles can provide significant

reductions in emissions with a cleaner electrical grid and we should be encouraging the development and deployment of battery technologies. However, we should consider whether there are better ways to incentivize electric vehicles than ignoring the upstream emissions from electricity generation in a program designed to reduce greenhouse gas emissions. As electric vehicle production and use are expanded, and in future rounds of standards, it is critical that EPA and NHTSA treat electric vehicles in an accurate manner.

South Coast Air Quality Management District

Second, the South Coast AQMD staff view the EPA credits for electric vehicles as overly permissive. Under ARB's strict accounting of electric vehicle credits for its greenhouse gas standards, electric vehicles are credited with greenhouse gas emissions of 130 grams per mile calculated based on the average upstream emissions of the California grid.

The California grid is heavily dominated by natural gas and renewable power sources. On a per capita basis, the California grid is 50 percent lower in greenhouse gas emissions than the national grid.

Even with these life-cycle emission advantages for electric vehicles used in California, ARB insists that the upstream emissions be fully reflected in the well-to-wheel carbon accounting.

In stark contrast, the EPA credits national electric vehicles with zero greenhouse gas emissions per mile thereby ignoring the upstream emissions entirely. This assumption risks damaging the credibility of the overall EPA greenhouse gas emissions standards program as it employs inappropriate carbon accounting practices.

In addition, EPA is proposing a multiplier of up to two to one, which amplifies the impact of this lax EV credit criterion. As a result, 13 gasoline cars could effectively be exempted for every single electric vehicle credited under the EPA program.

This dilution in program effectiveness should be minimized as much as possible. At a minimum, the AQMD staff recommend that EPA put a limit on the number of vehicles which would qualify for the zero gram EV credit and that any credits be aligned ultimately with ARB's life-cycle credit methodology which suggests a credit value closer to 200 grams nationally rather than zero.

[Comments are from LA Testimony, OAR-2009-0472-7283, pp.59-67.]

State of New Jersey

General advanced technology vehicle credit comments: The Department supports the promotion of alternative fuel vehicles, which includes electric vehicles, and advocates a diversified vehicle fleet as the only way the State can meet its statewide greenhouse gas reduction limits. In addition, the Department agrees with the USEPA that it is important to ensure that deployment of new vehicle technologies or fuels does not result in increases in emissions of greenhouse gases. Overall, we strongly support the use of appropriately valued 'bonus' credits to encourage the earlier introduction of new advanced vehicle power trains, including electric vehicles (EVs),

PHEVs and fuel cell vehicles (FCVs). The Department supports the USEPA's statement that these technologies have the potential for more significant reductions of greenhouse gas emissions than any technology currently in commercial use and that encouraging early introduction of these technologies will help to enable their wider use in the future.

In administering these 'bonus' credits, the Department feels strongly that the three primary vehicle technologies (EVs, PHEVs and FCVs) should not be given the same value. Instead, the Department supports differentiating between EVs and PHEVs for advanced technology credits. As described by USEPA on page 49533 of the proposal, PHEVs should be provided a lesser multiplier compared to EVs. The PHEV multiplier should be prorated based on the equivalent electric range of the vehicle in order to incentivize battery technology development. In addition, the Department recommends a credit approach that provides different credit levels to even further differentiate between vehicle types, similar to the approach adopted by California in its Zero Emission Vehicle (ZEV) regulations. California's approach allows these credits to vary from a factor of 1.0 for utility EVs with less than a 50 mile range to 7.0 for Type V FCVs that can travel over 300 miles and have a fast charge time of less than 15 minutes, thereby providing increased credit for the most efficient technologies. Another possible method for determining credits would be to base the multipliers on the projected greenhouse gas contributions of the vehicles, including the contribution of the grid supplying power to the location where the vehicles are recharged. While we understand that this last method would be difficult to implement, the Department encourages the USEPA to reexamine the possibility of using a broader, lifecycle approach to determining these credits.

Finally, the Department agrees with a phasing down of the credits over time as vehicle development and production costs decline due to economies of scale and other factors. However, New Jersey, instead of completely eliminating the 'bonus' credits, supports the continuation of some level of 'bonus' credit for FCV and longer range battery electric vehicles (BEVs). [OAR-2009-0472-7109.1, p.3]

Zero Emission Vehicle credits: The Department is concerned that the proposal's assumption of zero grams per mile CO2 equivalent for vehicles powered by electricity does not include the full life cycle emissions of ZEVs. While we agree that this approach is appropriate in the initial years to serve as an incentive for the production of these vehicles, it does not represent the full well-to-wheel emissions from these vehicles, and so should not be continued indefinitely. While we strongly support incentives for the introduction of advanced technology vehicles, we are concerned that the magnitude of credits being offered for these vehicles may, in the long term, unnecessarily weaken the overall effectiveness of the proposed standards. The Department encourages the USEPA to re-evaluate its advanced technology vehicle credits to ensure that an appropriate level of credit is provided by considering the entire life cycle of each vehicle, e.g., vehicle technology and fuel, to provide a balance between encouraging advanced vehicle technologies while protecting the greenhouse gas emission reductions. [OAR-2009-0472-7109.1, p.4]

[State of New Jersey also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 115-117.]

State of Washington Department of Ecology

Ecology also takes this opportunity to comment on several other issues related to this proposal. First, we support EPA's proposal of additional credit to encourage the early commercialization of advanced vehicle power trains including electric vehicles, plug-in hybrid vehicles and fuel cell vehicles. As for the proposed credit multiplier approach, Ecology encourages EPA to assign a national average upstream emission factor to each advanced technology, rather than using the proposed zero gram per mile CO2, for use in calculating the credit. [OAR-2009-0472-7299, p.2]

EPA acknowledges that for each EV sold, in reality the total emissions is not zero, since there is a corresponding increase in upstream CO2 emissions due to an increase in the requirements for electric utility generation. As such, EPA's proposal to assign zero grams per mile CO2 could result in credits that are large enough that they could substantially reduce, the actual greenhouse gas reductions provided by the national program. [OAR-2009-0472-7299, p.2]

Toyota Motor North America

EPA proposes to allow early advanced technology vehicle (ATV) credits for sales of EVs, PHEVs, and fuel cell vehicles. First, EPA proposes to assign a 'zero' GHG value for the electric operation portion for such vehicles, in essence providing a second incentive for such technologies. Second, EPA's proposal includes a sales multiplier in the range of 1.2 to 2.0 for all eligible vehicles. EPA is considering a phase down in sales the multiplier by model year 2016. [OAR-2009-0472-7291, p.24]

Toyota agrees with the concept of providing early credits for these advanced technology vehicles in terms of the 'zero' assigned GHG value for the electric operation portion. While non-zero upstream fuel production emissions will exist for these technologies, recognizing the 'zero' tank-to-wheel emissions of the vehicle itself should provide a marginal incentive for OEM's to consider these technologies. [OAR-2009-0472-7291, p.24]

Toyota is concerned with EPA's proposal to offer a range of sales multipliers. The 'zero' assigned GHG level for these vehicles would provide an incentive, and is more directly tied to a performance criterion (electric operating range) than a sales multiplier. It is unclear why EPA proposes, in essence, a double credit for these technologies. [OAR-2009-0472-7291, p.24]

Of course, compliance incentives alone are not sufficient to promote wide-scale deployment of these technologies, nor do such incentives provide any clear benefit in compelling consumers to actually purchase advanced technology vehicles. In order to truly promote commercialization of advanced technology vehicles such as plug-in hybrids, electric vehicles and fuel cells, Toyota urges EPA and NHTSA to continue to work with OEMs, states, energy providers, NGOs and others to lower the barriers to widespread commercialization of these promising technologies, especially adequate refueling infrastructure and the codes and standards necessary to support it. [OAR-2009-0472-7291, p.24]

Union of Concerned Scientists

EPA has requested comment on proposed credit flexibilities that "encourage the early commercialization of advanced vehicle powertrains, including electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles." We break these flexibilities up into two categories. [OAR-2009-0472-7181.1, p.7]

First, is the proposed use of advanced technology vehicle credits for EVs, PHEVs, and FCVs in which a multiplier is applied to the number of vehicles sold, thus counting as more than one vehicle in the manufacturer's fleet average. These credits would be an additional incentive above and beyond existing, and substantial, vehicle R&D tax incentives, loans, grants, and joint development programs for such technologies. EPA proposes a multiplier in the range of 1.2 – 2.0 and solicits comment on both its magnitude and whether it should be held constant or ramp down over time. [OAR-2009-0472-7181.1, p.7]

UCS recognizes the rationale for such credits, but we are concerned about the magnitude of the multiplier and its effect on eroding actual emissions savings offered by the rule. At least one manufacturer – Nissan – has already announced plans to produce up to 150,000 EVs annually beginning as early as 2012. Given Nissan's stated intentions, one questions whether advanced technology vehicle credits will encourage early adoption of EV technology, or whether they will merely provide windfall surplus credits to a company whose advanced technology development efforts are already underway. [OAR-2009-0472-7181.1, p.7]

The same is especially true for model year 2009-2011 EVs, for which EPA also proposes providing credits. Given EPCA's requirement of finalizing rules 18 months before the model [OAR-2009-0472-7181.1, p.7] year, such vehicles already have fully developed marketing plans that will not be affected by the MY2012-MY2016 rule. Providing credits for these model years simply provides the manufacturers with windfall credits, an approach fundamentally inconsistent with the stated objective of the policy. [OAR-2009-0472-7181.1, p.8]

Second, EPA proposes use of an emission factor of zero g/mi in the assessment of EVs, (the electric portion of) PHEVs, and FCVs. While EPA acknowledges that "in reality the total emissions…is not zero," it rationalizes the use of such a factor because it "is also interested in promoting very advanced technologies such as EVs which offer the future promise of significant reductions in GHG emissions." [OAR-2009-0472-7181.1, p.8]

UCS strongly objects to this approach, as it lacks technical justification, erodes savings of the program, and even stands in stark contrast to recent assessments performed by the agency itself. According to the joint EPA-DOE website fuel economy.gov, a recent (2003) pure electric vehicle is responsible for nearly half as much heat-trapping emissions as its gasoline-powered counter part. The 2003 RAV4 EV has a stated annual carbon footprint of 3.9 tons of CO2, while the gasoline (2-wheel drive, automatic transmission) version has an annual carbon footprint of 8.0 tons. [OAR-2009-0472-7181.1, p.8]

Credit Consequences

As demonstrated below, the consequences of offering either of these advanced technology incentives – individually or together – at volumes in line with Nissan's stated production are not

trivial. According to Automotive News, Nissan expects to have 20,000 Leafs pre-sold by the third quarter of 2010, and intends to produce 150,000 units annually starting in late 2012. For the purpose of examining the upper bound impacts, let us assume Nissan's 2012 car sales reside at 958,696 units (including electric vehicles) with a conventional passenger car fleet average stringency of 263 g/mi. The inclusion of 0 g/mi for 150,000 passenger car electric vehicles would provide Nissan with approximately 7.5 million megagrams of credit, with no multiplier in effect. If an advanced technology vehicle credit multiplier were used, the credit amount would increase further, to between 8.8 million megagrams and 13.0 million megagrams (corresponding to a multiplier of 1.2 and 2.0, respectively). By contrast, the use of an emission factor that acknowledges the upstream environmental impact of electric drive vehicles would dampen the quantity of surplus credits that could be accrued, resulting in credits more reflective of actual tons saved. Assuming no multiplier, the use of a 130 g/mi emission factor (the value assigned to EVs in the California Pavley program) would yield credits of 3.8 million megagrams. Multiplier use would increase credit amounts to between 4.4 million and 6.6 million megagrams (again, corresponding to a multiplier of 1.2 and 2.0, respectively). As summarized in Table 1, the effect of choosing a 0 g/mi factor over an alternative EV factor such as 130 g/mi yields the generation of between 3.7 and 6.4 million additional megagrams of credit. Similarly, as shown in Table 1, use of a 2.0 sales multiplier dramatically boosts manufacturer credits an additional 2.8 million to 5.5 million megagrams. [OAR-2009-0472-7181.1, p.8]

[See docket OAR-2009-0472-7181.1, p.9 for Table 1. Possible Credit Accrual Resulting from Sale of 150,000 Nissan Leaf EVs megagrams]

Putting this into a comparative context, even assuming the more modest multiplier of 1.2, adoption of a 130 g/mi factor for 150,000 Leaf EVs would weaken the compliance stringency for Nissan's remaining passenger car fleet from 263 g/mi to 293 g/mi. Use of a 0 g/mi factor would weaken the compliance stringency from 263 g/mi to a troubling 322 g/mi (an erosion of an astounding 6.2 mpg-equivalent from Nissan's passenger car fleet). These values are higher than those of the average Model Year 2008 car and fleet. [OAR-2009-0472-7181.1, p.9]

While UCS supports policies that encourage advanced technology development, we see no reasonable justification to provide windfall credits of this sort. Given the numerous incentives already in place to promote advanced technology development (R&D tax incentives, loans, grants, joint development programs, etc.), UCS strongly recommends that (a) no credits be offered before model year 2012 or after model year 2016 (by when commercialization decisions will have been made); (b) the use of a 0 g/mi emission factor be abandoned; (c) an emission factor reflective of actual in-use emissions, consistent with current research, be adopted; and (d) a multiplier no higher than 1.2 be used, with a rampdown of 0.05 per year (i.e. 1.20 in 2012; 1.15 in 2013; declining to 1.0 in 2016). This rampdown would provide a smooth transition for manufacturers while rewarding the earliest actors, as well as ensure that credits see a proper unset. Alternatively, a more aggressive rampdown could be employed that is triggered once a manufacturer reaches a specific cumulative sales level, such as the first 200,000 units. [OAR-2009-0472-7181.1, p.9]

Further, it was unclear from our reading of the proposed rule whether the agency plans to allow trading, banking, or borrowing of advanced technology vehicle credits. UCS believes that any

credits accrued for advanced technologies should not be available for trading, banking, or borrowing. The proposed advanced vehicle credits do not represent actual emission reductions and thus should not be available to manufacturers for the purpose of balancing emission deficits, or for trading to other manufacturers. Moreover, banking of credits would slow future technology adoption, undermining the concept behind the credit. [OAR-2009-0472-7181.1, p.9]

Should the agency decide to employ advanced technology credits, we urge the agency to consider that manufacturers have a history of becoming dependent on credits, opting to choose them over actual improvements when more cost effective. As such, it is critical that any advanced technology credits be limited in availability (quantity and duration), and that they be designed to truly accelerate technology as well as to minimize the loss of near term emission reductions that will occur. [OAR-2009-0472-7181.1, p.9]

Lastly, on a related note, UCS questions the underlying methodology used for computing advanced technology vehicle credits. The calculations assume approximately 191,000 miles of [OAR-2009-0472-7181.1, p.9] lifetime travel for passenger cars, and more than 220,000 miles of lifetime travel for light trucks. We believe it is unreasonable to assume that the first round of advanced technologies such as EVs, FCVs and PHEVs would see lifetime VMT as high as their conventional counterparts, and that use of the higher VMT artificially inflates the savings that those vehicles could provide the environment. Technology limitations as well as infrastructure limitations (causing, for example, limits to EV driving range) each play into advanced vehicle VMT levels, and should be accounted for when assessing the value of credits accrued by such technologies. As such, UCS recommends the agencies modify VMT assessments for advanced technology vehicles in the calculation of credits. [OAR-2009-0472-7181.1, p.10]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.103-113 (p.108)]

Second, compliance credits should be based on real-world performance. UCS is concerned that the NPRM includes credits for advanced vehicles that could erode the benefits of the program and give automakers credit for actions undertaken to meet California's Zero Emission Vehicle program.

California's ZEV program requires automakers to manufacture and sell zero emission vehicles. By 2014, the current California program could result in close to 60,000 plug-in hybrid electric vehicles as well as 7,500 pure battery electric or fuel-cell vehicles on the road.

The proposed federal program would allow manufacturers to accrue credits for vehicles that incorporate advanced zero emission technologies. This credit would provide automakers with a credit multiplier in the range as proposed of 1.2 to 2.0 for advanced vehicles. In essence, this allows advanced vehicles such as plug-ins, electric, and fuel-cell vehicles to count as more than one vehicle in a manufacturer's fleet average.

Compounding this is EPA's proposal to use an emissions factor of zero grams per mile for electric vehicles and the electric portion of plug-ins.

While UCS supports flexibility in compliance mechanisms, credits should be based on real and verifiable emissions reductions. This means that credits for electric drive should be based upon average life-cycle emissions from electricity, including upstream emissions from power generation.

The assumption that all electric vehicles have zero emissions will erode the benefits of the federal program and could delay widespread adoption of cost-effective technologies available today to reduce emissions.

Plus, automakers already producing ZEVs to meet California's ZEV mandate will also get credit under a federal program, credit that might far exceed their actual life-cycle emissions.

Therefore, UCS recommends that in this rule no advanced vehicle credits be offered before model year 2012 or after model year 2016 and that the use of a zero-grams-per-mile emission factor be abandoned and that an emission factor reflective of actual in-use emissions consistent with current research be adopted.

And we recommend a multiplier of no higher than 1.2 be used; to abandon the 2.0, start with 1.2, and then decline to .05 per year, going to just the 1.0 in 2016 for these advanced vehicles. And the credits should expire once a manufacturer surpasses a certain volume threshold, such as 200,000 advanced vehicles sold.

[Union of Concerned Scientists also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 99-101.]

United Auto Workers

We are also supportive of EPA's proposal to provide compliance flexibility through a multiplier for electric-drive technologies and for so-called off-cycle technology credits. We believe strongly that these proposals will provide a desirable incentive to bring into production advanced fuel-saving technologies that have the potential to radically reduce the greenhouse gas emissions from motor vehicles. Although we recognize that this will cause a slight near-term reduction in the total amount of greenhouse gas emissions avoided, it will hasten the day when these technologies can be produced in large volumes. This will ultimately result in greater emissions reductions in the medium and long term because of the cost reductions expected with increased volumes of these advanced technologies. [OAR-2009-0472-7056.1, p.3]

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy

Credits for Electric Vehicles

The EPA proposes using a multiplier (ranging from 1.2-2.0) for electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles produced from MY 2012 through MY 2016. As a result of a multiplier, advanced technology vehicles can be counted as up to two vehicles when annual fleet fuel efficiency averages are calculated. [OAR-2009-0472-7188.1, p. 5]

Although we acknowledge that the use of a multiplier would be effectively promote utilization of cleaner technologies, we contend that the multiplier should be set at the lower end of the range (1.2) to avoid eroding the benefits of this proposed ruling. A multiplier in the higher range would not be conducive to curbing greenhouse gas pollution and would not be commensurate with the environmental benefit. Additionally, we urge the EPA to phase down the multiplier by 0.05 per year, so that it starts at 1.2 in 2012, and declines to 1.0 in 2016. [OAR-2009-0472-7188.1, p. 5]

In addition to the abovementioned credits, the EPA proposes using an emissions factor of 0 g/mi for EVs and PHEVs. As the EPA acknowledges in the NPRM, battery-powered vehicles do not produce emissions at the tailpipe. However, these are not zero-emissions vehicles. Emissions are produced where the power is generated, and electricity production is greenhouse gas intensive. In fact, according to the DOE, 44.7% of the electricity generated in the U.S. is produced from coal-fired power plants. [OAR-2009-0472-7188.1, p. 6]

On average, in the United States, the generation of each kWh produces 1.36 pounds, or 617 grams, of CO2. By comparison, combustion of a gallon of gasoline emits approximately 8,900 grams of CO2. Therefore, one gallon of gasoline produces similar greenhouse gas emissions as nearly 15 kWh of electric power. For example, if the Tesla Roadster uses 21.7 kWh to travel 100 miles, then the CO2 emissions from generating its power will be 13,389 grams (617 g x 21.7kWh), or the equivalent of 1.5 gallons of gasoline. [OAR-2009-0472-7188.1, p. 6]

Another consideration is that emissions change dramatically by region due to variations in the electricity mix. In states where nearly 80% of electric power comes from fossil fuels (such as Kansas and Missouri), each kWh produces 1.87 pounds or 849 grams of CO2. As a result, in those states the same vehicle would emit 18,423 grams of CO2 or the equivalent of 2.07 gallons of gasoline to travel 100 miles. This analysis shows that ignoring electric power production emissions provides incomplete and misleading information. The agency must account for high emission energy sources and rechargeable electric cars should not be given a zero emissions rating. [OAR-2009-0472-7188.1, p. 6]

As noted in the proposed rulemaking, electricity generation represents the largest source of greenhouse gas emissions in the U.S. (p. 49508), while transportation sources are second. Giving excessively generous credits to vehicles that rely on grid electricity translates into simply shifting the burden from a tailpipe to a smokestack, without achieving significant improvements. [OAR-2009-0472-7188.1, p. 6]

University of Pennsylvania, Environmental Law Project

Assignment of Zero Emissions to Advanced Technologies

Currently, the proposed rule evaluates advanced technology vehicles like plug-in electrics as if they were responsible for no greenhouse gas emissions whatsoever. Yet these vehicles run on energy sources like electricity, which do generate significant greenhouse gasses in their production. Although these vehicles are certainly very efficient, their operation still contributes greenhouse gases to the atmosphere, and there is little policy justification for benefiting these advanced technologies so significantly over alternatives like gas hybrids. Furthermore, the sale

of a relatively small number of these vehicles might allow a manufacturer to significantly reduce the extent to which it must make efficiency improvements in the rest of its fleet. [OAR-2009-0472-7286.1, p. 18]

U.S. Coalition for Advanced Diesel Cars

The Coalition applauds EPA and NHTSA for championing reality-based solutions to our national petroleum end GHG reduction objectives. In each of the credit mechanisms described above, the agencies demonstrate the importance of controlling off-cycle emissions through a holistic approach that is not chained exclusively to a pair of 40-year old test procedures. Each of these reality based compliance features demonstrates recognition of a simple truth: the success of the proposed regulations will be based on the daily reductions in petroleum barrels and well-to-wheel GHG tons, not on a "fleet average" compliance certificate for the regulated parties. And to achieve those daily reductions, vehicles employing technologies must appeal to U.S. consumers and must sell in high annual volumes.

The universe of possible fuels for light duty vehicles contains relatively few that have a higher energy density than gasoline. Diesel is one of those fuels. A gallon of diesel has 11 percent more energy than a gallon gasoline (and a gallon of B10 has 12 percent more energy than a gallon of E10). Because of this energy density, the transportation and distribution of diesel fuel to users around the country produces less GHG per usable unit of energy. Additionally, the refining of diesel fuel requires less energy and produces fewer GHG emissions compared to a gasoline baseline. Taken together, these reduced off-cycle emissions contribute additional benefits to society when high density diesel is substituted for lower density gasoline. Unlike its treatment of FFVs and other credit mechanisms proposed, however, EPA is not proposing to count these real diesel GHG offsets. According to recent EPA research, the up-stream GHG emissions associated with refining, transporting, distributing and storing transportation fuels are [that for] every gallon of diesel fuel substituted for a gallon of gasoline, an off cycle benefit of 280 GHG grams occurs. Returning to the pickup truck example shown on page 12, in which a 24 mpg diesel engine is sold in place of the standard 18 mpg engine, the 3,700 lifetime gallons of fuel saved would also generate an off-cycle GHG benefit of 1 metric ton. Over 221,199 lifetime miles traveled, this is the equivalent of an off cycle credit of 4.7 grams per mile. This value is on the order of the maximum MAC efficiency credit of 5.7 g/mile that EPA proposes under its offcycle credit mechanism.

Clearly, the off cycle benefits of diesel fuel should be comprehended in EPA's historic GHG rulemaking process as these benefits are already documented in the agency's technical research. Since EPA proposes off-cycle credit mechanisms to incentivize such solutions as roof-top solar panels, surely the Administrator recognizes a parallel disincentive exists for proven technologies that are deliberately excluded from the off-cycle credit mechanism. We urge EPA to adopt rules that comprehend the holistic, full-cycle GHG performance recognizing that vehicles and fuels work as a system in our national efforts to reduce the C02 inventory and petroleum consumption. [OAR-2009-0472-7496, p. 13-14]

Volkswagen Group of America (Volkswagen)

With regards to additional credit flexibilities, Volkswagen also supports the EPA's proposal. Credit for GHG reductions from air conditioning, advanced technology vehicles, C02 performance credit and flexible fuel vehicles have the potential to offer significant GHG reductions and we believe it is appropriate for the EPA to recognize these reductions and provide an avenue for manufacturers to utilize credit for these vehicles and technologies. [OAR-2009-0472-7210.1, pp.3-4]

With regards to advanced technology vehicles, Volkswagen supports credit for these vehicles to the maximum extent possible. To that end Volkswagen believes the maximum credit proposed by EPA (2 credits per vehicle for fuel cell, battery electric and grid connected hybrids) Is appropriate over the full length of this proposed regulation. We also support the EPA proposal to set zero emission tailpipe performance for the electric portion of operation of a vehicle with zero emission capability to zero grams per mile over the length of the proposed regulatory period. Volkswagen believes that incentives are necessary to help the commercialization of these types of vehicles and the credit as proposed will provide some benefit for these vehicles as they are introduced to the market through the 2016 MY. The credit level and the handling of the CO2 performance of these vehicles can be re-addressed during the regulatory process for a National program for 2017 and beyond. If anything, Volkswagen believes that during the 20122016 timeframe additional credit could be allowed for these vehicles. We do not believe that volumes for these vehicles during this timeframe will be significant enough to result in excessive credits for automakers. [OAR-2009-0472-7210.1, p.4]

Volkswagen also supports the flexibility provided in the regulation to allow credit for real world GHG reductions that are not captured on the relevant test cycles. We believe that these GHG reductions can be significant and can also offer significant benefit to consumers. We urge the EPA to maintain a viable pathway and mechanism for evaluating these types of technologies. Volkswagen also notes that some technologies may offer benefits on the relevant test cycles while also offering either significant or greater benefits to customers in real world usage. We propose that EPA accommodate this type of technology that may have benefit both on and off-cycle. An example of this could be various forms of stop/start systems. It is possible that certain designs or strategies for stop/start systems will yield varied results over the fuel economy test cycles versus off-cycle modes. For example, Volkswagen believes some stop/start systems may yield a 1-2 percent improvement over the fuel economy test cycles but yield an 8 percent benefit in real world driving for the customer. Volkswagen plans to discuss this type of technology in more detail with EPA staff in the future, but for the purposes of this rulemaking it is important to establish that CO2 performance credit is possible and that a fair process is in place to evaluate and grant the correct credit for a given technology. In addition, Volkswagen recommends that credits from CO2 performance technology under real world driving conditions should be In effect over the full time period of this regulation. Volkswagen also notes that measurable and documented real world GHG reductions due to technology related improvements to vehicles should not be strictly related to new or innovative technical measures - it is possible that simple, known technology could yield significant real world GHG reductions. [OAR-2009-0472-7210.1, p.4]

Volkswagen also supports the EPA's efforts to harmonize the GHG regulation with the current NHTSA regulation by offering GHG credits for FFV vehicles at the same level as the CAFE:

credit available in the NHTSA CAFE: regulation through the 2012 - 2015 MY. For 2016 MY and beyond the application of a factor based on FFV use is appropriate. We support EPA's efforts to allow flexibility through two pathways (EPA factor or manufacturer factor) after the 2015 MY. [OAR-2009-0472-7210.1, p.4]

EPA Response:

5.7.3.2 Comments on Whether to Provide an Incentive for Advanced Technology Vehicles

Comments on whether EPA should provide any kind of incentive to promote advanced technology vehicles during the MY2012-2016 timeframe covered in this rulemaking fell into three general categories. While this section summarizes the overall comments with respect to the general concept of incentives, the following two sections provide summaries of more targeted comments on the zero gram/mile compliance value and the vehicle multiplier.

The first group of commenters explicitly endorsed both the concept of providing some kind of incentive for advanced technology vehicles as well as at least one of the two proposed incentives (the zero gram/mile compliance value and the vehicle multiplier). This group included every automaker that commented on this topic: BMW, Chrysler, Ford, Honda, Hyundai, Mercedes-Benz/Daimler AG, Mitsubishi, Nissan, Toyota, and Volkswagen. In addition to individual automakers, several other auto industry companies and associations were represented in this group of commenters as well, including the Alliance of Automobile Manufacturers, Cummins, the Motor and Equipment Manufacturers Association, the National Automotive Dealers Association, SABIC Innovative Plastic, and the United Auto Workers. The State of New Jersey and the Washington Department of Ecology also submitted comments supporting a temporary incentive. Many of these comments recognized the market barriers facing advanced technology vehicles, and that an incentive program could promote technologies that could yield much larger GHG emissions benefits in the future.

A second group of commenters expressed general support for some kind of temporary incentive for advanced technology vehicle incentives, but argued that EPA's proposed incentive program, in its entirety, was too generous, and stated explicit opposition to one or both of EPA's incentive mechanisms. These commenters included the California Air Resources Board, the Ecology Center, the Environmental Defense Fund, Honeywell Transportation Systems, the International Council on Clean Transportation, the Massachusetts Department of Environmental Protection, the National Association of Clean Air Agencies, the Natural Resources Defense Council, the New York State Department of Environmental Conservation, the Northeast States for Coordinated Air Use Management, the South Coast Air Quality Management District, and citizen Yuli Chew. These commenters generally suggested that EPA re-evaluate the overall incentive program to seek a better balance between promoting advanced technology vehicles and minimizing the loss of GHG emissions benefits of the overall program.

A third group of commenters explicitly or implicitly opposed the concept of any incentives for advanced technology vehicles (note that an advanced technology vehicle could, of course, still earn an emissions credit based on superior emissions performance). This group included the

American Council for an Energy Efficient Economy, the New York University School of Law/Institute for Policy Integrity, Public Citizen/Safe Climate Campaign, Sierra Club, and the Union of Concerned Scientists. Although some of these groups discussed vehicle multipliers of 1.2, phasing out to zero over the MY2012-2016 timeframe, it seems most likely that most or all of these groups cited the 1.2 vehicle multiplier only to emphasize their support for the lowest possible multiplier. That is, the general tone of their comments suggested that they might have well supported no multiplier had that been within the range of the EPA proposal. The thrust of these comments is that compliance values should be based on full fuel-cycle environmental performance and that there is no need for special regulatory incentives for advanced technology vehicles.

After considering the public comments, EPA agrees with the first two groups of commenters that it is appropriate to provide a temporary regulatory incentive to promote early commercialization of technologies that have the potential to produce very large GHG emissions reductions in the future, but which face major market challenges. EPA believes that EVs, PHEVs, and FCVs are potential GHG "game changers" if major cost and consumer barriers can be overcome and if there is a nationwide transformation to low-GHG electricity (or hydrogen, in the case of FCVs). EPA has adopted the concept of advanced technology incentives in several of its most recent and important rulemakings under Title II of the Clean Air Act.[13] EPA further agrees with the second group of commenters that the proposed incentive program was excessive, and is finalizing a restructured incentive program that EPA believes strikes a more reasoned balance between near-term environmental performance and long-term environmental goals. Although EPA disagrees with the third group of commenters, who argued for no incentive program whatsoever, EPA is structuring the rule to cap the number of vehicles eligible for the incentive program and has projected the potential loss in GHG emissions benefits that could result from the restructured incentive program. As discussed in the preamble and RIA, EPA projects that the restructured incentive program could reduce the GHG emissions benefits of the program by approximately 25 million metric tons, or less than 3 percent of the projected GHG emissions benefits of the overall program.[14] EPA believes this is a reasonable balance given these technologies' potential for GHG reductions in a regime where upstream GHG emissions are separately controlled. Finally, in response to concerns expressed by many commenters, EPA emphasizes that the restructured incentive program only applies to the MY2012-2016 timeframe covered by this final rule, and that EPA will reassess the issue of whether to have any incentives for advanced technology vehicles for model years 2017 and beyond based on the status of advanced technology vehicle commercialization and other relevant factors.

5.7.3.3 Comments on the Zero Grams/Mile Compliance Value for EVs, FCVs, and PHEVs When Operated on Grid Electricity

EPA proposed a zero grams/mile compliance value for EVs and PHEVs when operated on grid electricity (and for FCVs, though EPA received few comments on FCVs, presumably because of the expectation of low sales in MY2012-2016). The zero grams/mile compliance value is an incentive in that, while it accurately accounts for tailpipe GHG emissions, it does not reflect the

[13] For example, the Tier 2 Light-Duty Vehicle, 2007 Heavy-Duty Highway, and Tier 4 Nonroad Diesel rulemakings.
[14] See Regulatory Impact Analysis, Appendix 5.B.

increase in upstream GHG emissions associated with the electricity used by EVs relative to the upstream GHG emissions associated with the gasoline or diesel fuel used by conventional vehicles. For example, based on GHG emissions from today's national average electricity generation (including GHG emissions associated with feedstock extraction, processing, and transportation) and other key assumptions related to vehicle electricity consumption, vehicle charging losses, and grid transmission losses, a midsize EV might have an upstream GHG emissions of about 180 grams/mile, compared to the upstream GHG emissions of a typical midsize gasoline car of about 60 grams/mile. Thus, the EV would cause a net upstream GHG emissions increase of about 120 grams/mile (in general, the net upstream GHG increase would be less for a smaller EV and more for a larger EV). The zero grams/mile compliance value provides an incentive because it is less than the 120 grams/mile value that would fully account for the net increase in GHG emissions, counting upstream emissions. The net upstream GHG impact could change over time, of course, based on changes in electricity generation or gasoline production. EPA received more comments on the proposed zero grams/mile compliance value for EVs (and PHEVs operated on grid electricity) than any other issue associated with advanced technology vehicle incentives.

A majority of commenters were opposed to the proposed zero grams/mile compliance value for EVs and PHEVs operated on grid electricity: American Council for an Energy Efficient Economy, the California Air Resources Board, citizen Yuli Chew, Clean Energy Fuels, Environment Michigan, Environment New Jersey, Environmental Defense Fund, citizen Mark Glasser, Honda, Honeywell Transportation Systems, the International Council on Clean Transportation, citizen Valerie Karplus, the Massachusetts Department of Environmental Protection, National Association of Clean Air Agencies, Natural Resources Defense Council, the New York State Department of Environmental Conservation, the New York University School of Law/Institute for Policy Integrity, Public Citizen/Safe Climate Campaign, Sierra Club, the South Coast Air Quality Management District, the Washington Department of Ecology, Union of Concerned Scientists, the University of California/Santa Barbara Bren Working Group on Vehicle Fuel Economy, and the University of Pennsylvania/Environmental Law Project. The core of these comments was that while tailpipe GHG emissions of vehicles operated on grid electricity is zero, the net full fuel-cycle GHG emissions are not zero, due to the upstream GHG emissions associated with electricity generation, and ignoring these emissions could "undermine" the overall GHG benefits of the program. The Natural Resources Defense Council provided a specific methodology for calculating full fuel-cycle GHG emissions for EVs. While opposed to the zero grams/mile compliance value, the South Coast Air Quality Management District suggested that, if EPA were to maintain the incentive, EPA should consider limiting the number of vehicles which would qualify for the incentive.

Several automobile companies and others supported the proposed zero grams/mile compliance value: the Alliance of Automobile Manufacturers, BMW, Chrysler, Cummins, Ford, Mercedes-Benz/Daimler AG, Mitsubishi, the Motor and Equipment Manufacturers Association, the National Automobile Dealers Association, Nissan, the State of New Jersey, Toyota, and Volkswagen. Several of these commenters pointed out that previous motor vehicle regulations have focused on tailpipe emissions only, and Nissan stated that excluding upstream GHG emissions is "legally required" under Clean Air Act section 202(a)(1). The National Automotive

Dealers Association stated that Congress will decide whether to regulate upstream GHG emissions from electric utilities.

EPA's final incentive program retains the zero grams/mile compliance value for EVs and FCVs, and for PHEVs when operated on grid electricity, a position supported by most automakers and a few other commenters. But, EPA disagrees with Nissan that excluding upstream GHGs is legally required under section 202(a)(1). In this rulemaking, EPA is adopting standards under section 202(a)(1), which provides EPA with broad discretion in setting emissions standards. This includes authority to structure the emissions standards in a way that provides an incentive to promote advances in emissions control technology. This discretion includes the adjustments to compliance values adopted in the final rule, the multipliers we proposed, and other kinds of incentives. In response to the comment of Nissan, EPA recognizes that we have not previously made adjustments to a compliance value to account for upstream emissions in a section 202(a) vehicle emissions standard, but that does not mean we do not have authority to do so in this case. In addition, EPA is not directly regulating upstream GHG emissions from stationary sources, but instead is deciding how much value to assign to a motor vehicle for purposes of compliance calculations with the motor vehicle standard. Although the logical place to start is the emissions level measured under the applicable test procedure, section 202(a)(1) does not require that EPA limit itself to only that level. For vehicles above the cumulative vehicle production volume caps described below, EPA will adjust the measured value to a level that reflects the net difference in upstream GHG emissions compared to a comparable conventional vehicle. This will account for the actual GHG emissions increase associated with the use of the EV. As shown above, upstream GHG emissions attributable to increased electricity production to operate EVs or PHEVs currently exceed the upstream GHG emissions attributable to gasoline vehicles. There is a rational basis for EPA to account for this net difference, as that best reflects the real world effect on the air pollution problem which the rule addresses. For vehicles above the cumulative vehicle production volume caps, EPA is reasonably and fairly accounting for the incremental increase in upstream GHG emissions from both the electric vehicles and the conventional vehicles. Consequently, EPA is not, as Nissan suggested, arbitrarily counting upstream emissions for electric vehicles but not for conventional fuel vehicles. EPA also agrees with the National Automotive Dealers Association that Congress will consider whether to regulate GHG emissions from utilities, and that will be one factor that EPA will consider in future deliberations about how to treat vehicles that operate on grid electricity.

In response to the general concerns of many commenters about the potential of the zero grams/mile compliance value to possibly "undermine" the entire program, and the recommendation from the South Coast Air Quality Management District that EPA consider limiting the number of vehicles qualified to receive the incentive, EPA is adding a cumulative cap on the total production of EVs, PHEVs, and FCVs for which an individual manufacturer can claim the zero grams/mile compliance value during MY2012-2016. The cumulative vehicle production volume cap will be 200,000 vehicles, except those manufacturers that sell at least 25,000 EVs, PHEVs, and FCVs in MY2012 will have a cap of 300,000 vehicles for MY2012-2016. This higher cap option is an additional incentive for those manufacturers that take an early leadership role in aggressively and successfully marketing advanced technology vehicles. These caps are one way to limit the potential GHG benefit losses associated with the incentive program and therefore are another response to the concerns that the proposed incentives were excessive

and could significantly undermine the program's GHG benefits. If, for example, 500,000 EVs were produced in MY2012-2016 that qualified for the zero grams/mile compliance value, the loss in GHG benefits due to this program would be about 25 million metric tons, or less than 3 percent of the total projected GHG benefits of this program.[15] EPA believes this modest potential for reduction in near-term GHG emissions control is more than offset by the potential for very large future GHG emissions reductions that commercialization of these technologies could promote. The rationale for these caps is that an incentive is most critical when individual automakers are beginning to introduce advanced technologies in the market, and less critical once individual automakers have successfully achieved a reasonable market share and technology costs decline due to greater production volumes and experience. EPA believes that cap levels of 200,000-300,000 vehicles over a five model year period are reasonable, as production greater than this would indicate that the manufacturer has overcome at least some of the initial market barriers to these advanced technologies. Further, EPA believes that it is unlikely that many manufacturers will approach these cap levels in the MY2012-2016 timeframe.

Production beyond the cumulative vehicle production cap for a given manufacturer in MY2012-2016 will have its compliance values calculated according to a methodology that accounts in full for the net increase in upstream GHG emissions. For an EV, for example, this would involve: 1) measuring the vehicle electricity consumption in watt-hours/mile over the 2-cycle test (for example, a midsize EV might have a 2-cycle test electricity consumption of 230 watt-hours/mile), 2) adjusting this watt-hours/mile value upward to account for electricity losses during transmission and vehicle charging (dividing 230 watt-hours/mile by 0.93 to account for grid/transmission losses and by 0.90 to reflect losses during vehicle charging yields a value of 275 watt-hours/mile), 3) multiplying the adjusted watt-hours/mile value by a nationwide average electricity upstream GHG emissions rate of 0.642 grams/watt-hour at the powerplant[16] (275 watt-hours/mile multiplied by 0.642 grams GHG/watt-hour yields 177 grams/mile), and 4) subtracting the upstream GHG emissions of a comparable midsize gasoline vehicle of 56 grams/mile to reflect a true net increase in upstream GHG emissions (177 grams/mile for the EV minus 56 grams/mile for the gasoline vehicle yields a net increase and EV compliance value of 121 grams/mile).[17] [18] This methodology is similar to that advocated by the Natural Resources

[15] See Regulatory Impact Analysis, Appendix 5.B.

[16] The nationwide average electricity upstream GHG emissions rate of 0.642 grams GHG/watt-hour was calculated from 2005 nationwide powerplant data for CO_2, CH_4, and N_2O emissions from eGRID2007 (http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html), converting to CO_2 -e using Global Warming Potentials of 25 for CH_4 and 298 for N_2O, and multiplying by a factor of 1.06 to account for GHG emissions associated with feedstock extraction, transportation, and processing (based on Argonne National Laboratory's The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) Model, Version 1.8c.0, available at http://www.transportation.anl.gov/modeling_simulation/GREET/). EPA recognizes that there are many issues involved with projecting the electricity upstream GHG emissions associated with future EV and PHEV use including, but not limited to, average vs marginal, daytime vs nighttime vehicle charging, geographical differences, and changes in future electricity feedstocks. EPA chose to use the 2005 national average value because it is known and documentable. Values appropriate for future vehicle use may be higher or lower than this value. EPA will reevaluate this value in future rulemakings.

[17] A midsize gasoline vehicle with a footprint of 45 square feet would have a MY2016 GHG target of about 225 grams/mile; dividing 8887 grams CO2/gallon of gasoline by 225 grams/mile yields an equivalent fuel economy level of 39.5 mpg; and dividing 2208 grams upstream GHG/gallon of gasoline by 39.5 mpg yields a midsize gasoline vehicle upstream GHG value of 56 grams/mile. The 2208 grams upstream GHG/gallon of gasoline is calculated

Defense Council, with the one meaningful difference being the use of a national average electricity upstream GHG emissions rate, rather than a marginal rate, an issue addressed in Section 5.7.3.4 below.

The full accounting methodology for the portion of PHEV operation on grid electricity would use this same approach. PHEV compliance values will be determined by combining zero grams/mile for grid electricity operation with the GHG emissions from the 2-cycle test results during operation on liquid fuel, and weighting these values by the percentage of miles traveled that EPA believes will be performed on grid electricity and on liquid fuel, which will vary for different PHEVs. EPA is currently considering different approaches for determining the weighting factor to be used in calculating PHEV GHG emissions compliance values. EPA will consider the work of the Society of Automotive Engineers Hybrid Technical Standards Committee, as well as other relevant factors. EPA will issue a final rule on this methodology by the fall of 2010, when EPA expects some PHEVs to initially enter the market.

5.7.3.4 Comments on Vehicle Multiplier

EPA proposed a vehicle multiplier for EVs, PHEVs, and FCVs in the range of 1.2 to 2.0 and sought comments on the level of the multiplier and various ways it might best be structured. The proposed vehicle multiplier would also have been an incentive as it would have allowed an EV, PHEV, or FCV to count as more than one vehicle in an individual manufacturer's fleet average compliance calculations. For example, a vehicle multiplier of 2.0 would have effectively doubled the effective credit associated with an EV, PHEV, or FCV.

Nearly every automaker and industry-related group strongly supported a vehicle multiplier, including the Alliance of Automobile Manufacturers, BMW, Chrysler, Cummins, Ford, Honda, Hyundai, Mercedes-Benz/Daimler AG, Mitsubishi, the Motor and Equipment Manufacturers Association, the National Automobile Dealers Association, Nissan, SABIC Innovative Plastic, United Auto Workers, and Volkswagen. Some automakers supported vehicle multipliers in excess of the proposed range of 1.2 to 2.0, for example, Chrysler supported vehicle multipliers as high as 6.0 and Honda supported levels as high as 16.0 (for a FCV with a 300-mile range). About half of these organizations supported universal vehicle multipliers, and about half supported differential multipliers. Some of these commenters, such as the Alliance for Automobile Manufacturers, Ford, and Mitsubishi, also supported the concept of maintaining incentives until a certain market threshold was achieved. Also supporting a vehicle multiplier were the California Air Resources Board, citizen Yuli Chew, the State of New Jersey, and the Washington Department of Ecology.

A second group of commenters supported, or at least appeared willing to accept, a vehicle multiplier of 1.2, at the low end of the proposed range. These commmenters also generally advocated that the vehicle multiplier be phased out by MY2016. These commenters included the Massachusetts Department of Environmental Protection, Natural Resources Defense Council,

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from 19,200 grams upstream GHG/mmBtu (Renewable Fuel Standard Program, Regulatory Impact Analysis, Section 2.5.8, February 2010) and multiplying by 0.115 mmBtu/gallon of gasoline.

[18] Manufacturers can utilize alternate calculation methodologies if shown to yield equivalent or superior results and if approved in advance by the Administrator.

Northeast States for Coordinated Air Use Management, Public Citizen/Safe Climate Campaign, Sierra Club, Union of Concerned Scientists, and the University of California/Santa Barbara Bren Working Group on Vehicle Fuel Economy. As mentioned previously, the tone of some of these comments suggests that some of these commenters might have supported no multiplier had that been within the range of the EPA proposal.

There were a few commenters that explicitly rejected any vehicle multipliers, including the American Council for an Energy Efficient Economy, the New York University School of Law/Institute for Policy Integrity, and Toyota. The first two commenters rejected the need for any kind of incentive, while Toyota argued that a "double credit" was unnecessary and that the zero grams/mile compliance value is more directly tied to the vehicle technologies that EPA is incentivizing.

EPA's final advanced technology vehicle incentive program will not include any vehicle multipliers. In general, EPA agrees with the overall thrust of the majority of commenters that the proposed incentive program was too generous, and in particular we agree with Toyota that the zero grams/mile compliance value is more directly targeted to EVs, PHEVs, and FCVs than a vehicle multiplier, which could also apply to a wide number of other technologies. EPA agrees with those commenters that suggested some type of market threshold above which any incentives would be phased out, and we believe that the cumulative vehicle production volume caps discussed above reasonably implement this idea, providing a proper incentive for initial commercialization but limiting the potential loss in GHG emissions reductions associated with that incentive.

5.7.3.5 Comments on Miscellaneous Issues Related to the Advanced Technology Vehicle Incentive Program

A few commenters raised the issue of whether EPA should expand the specific technologies that are eligible for the advanced technology vehicle incentives. For example, the Alliance of Automobile Manufacturers suggested that hydrogen-fueled internal combustion engines be added, BMW advocated that clean diesel vehicles be included, and Mercedes-Benz/Daimler AG argued that both diesel vehicles and natural gas vehicles be incentivized. While not explicitly recommending that diesel vehicles be included in the advanced technology vehicle incentive program, the U.S. Coalition for Advanced Diesel Cars recommended that EPA recognize the full-fuel cycle GHG benefits based on diesel's higher energy density (leading to less GHG emissions from fuel distribution) and lower energy losses during refining. EPA is not expanding the list of eligible advanced vehicle technologies primarily because all of these technologies utilize internal combustion engines, which have dominated the personal vehicle market in this country for the last 100 years and do not present the same level of market challenges to automakers as EVs, PHEVs, and FCVs. EPA agrees that these other technologies face market barriers (e.g., hydrogen fuel availability, and natural gas on-board storage), but EPA believes the barriers are far less than those faced by EVs, PHEVs, and FCVs.

With respect to the arguments about diesel's full fuel-cycle GHG emissions benefits, EPA reiterates that the final GHG emissions standards are tailpipe standards, and EPA is not taking into account fuel upstream GHG emissions issues at this time, with the single exception of

electricity. While the tailpipe standards are fuel neutral, EPA recognizes that every motor vehicle fuel and fuel production process has unique upstream GHG emissions impacts. EPA has discretion in this rulemaking under section 202(a) (1) on whether to account for differences in net upstream GHG emissions relative to gasoline produced from oil, and intends to only consider upstream GHG emissions for those fuels that have significantly higher or lower GHG emissions impacts. At this time, EPA is only making such a determination for electricity, given that electricity upstream GHG emissions are about three times higher than gasoline upstream GHG emissions. The difference in upstream GHG emissions for both diesel fuel (the U.S. Coalition for Advanced Diesel Cars cites a value of 11% lower for diesel fuel, based on EPA data) and compressed natural gas are much lower, on a relative basis.

Related to the discussion above in Section 5.7.3.3 on the zero grams/mile compliance value, several commenters raised issues regarding the appropriate electricity upstream GHG emissions rate to use. Although EPA did not ask for comments on this issue, these comments are relevant in that, though EPA is retaining the zero grams/mile compliance value, vehicles produced in excess of the cumulative vehicle production volume caps discussed above will have their compliance values generated, in part, by an assumed electricity upstream GHG emissions rate. EPA has chosen to use the 2005 national average electricity upstream GHG emissions rate, and although several commenters supported this approach, others did not. Several commenters, including the American Council for an Energy Efficient Economy, Natural Resources Defense Council, and Sierra Club, recommended that EPA use a "marginal" electricity upstream GHG emissions rate, to account for the fact that vehicle use of grid electricity will be an additional demand that would likely be met by a different mix of electricity feedstocks than the national average. Given that many of the lowest-GHG electricity sources, such as nuclear and hydropower, are base sources and operated 24/7 except when forced down for maintenance or by extraordinary conditions, marginal electricity sources are often fueled with coal or natural gas, with higher GHG emissions than the typical base load. Other commenters, including the International Council on Clean Transportation and Public Citizen/Safe Climate Campaign, suggested that EPA consider differential electricity upstream GHG emissions rates reflecting the fact that there are significant differences in how electricity is generated in different regions and states. Accordingly, an EV sold in a state where coal is the dominant electricity feedstock would have a higher electricity upstream GHG emissions rate than an EV sold in a state where little coal is used. EPA recognizes that these are both legitimate issues, and that there are other relevant issues as well such as daytime vs nighttime vehicle charging, changes in future electricity feedstocks, etc. EPA has chosen to use the 2005 national average electricity upstream GHG emissions rate discussed above in part because it is known and documentable. Values appropriate for future vehicle use may be higher or lower than this value, and EPA commits to reevaluating these complex issues in any future rulemakings.

Finally, Honeywell Transportation Systems suggested that EPA establish a mechanism to verify the percentage of PHEV vehicle miles traveled on electricity and gasoline. The vehicle miles traveled weighting between electricity and gasoline will be a primary determinant of the overall GHG emissions compliance value for a PHEV. EPA agrees with Honeywell that this is an important issue as the weighting factor will be a critical element in determining PHEV GHG emissions compliance values, as discussed above. EPA is not proposing a specific approach for determining or verifying the weighting factor at this time, but EPA does commit to monitor

independent work in this area (for example, the work of Society of Automotive Engineers Committee J1711) and to issue a final decision on a methodology for determining this weighting factor by the fall of 2010.

5.7.4. Off-cycle Technology Credits

Organization: Ford Motor Company
Honda Motor Company
Mercedes-Benz (Daimler AG)
Association of International Automobile Manufacturers (AIAM)
Chrysler Group LLC (Chrysler)
Alliance of Automobile Manufacturers (Alliance)
Hyundai Motor Company
Toyota Motor North America
BMW of North America, LLC (BMW)
Public Citizen and Safe Climate Campaign
Union of Concerned Scientists
Natural Resources Defense Council
Sierra Club
United Auto Workers
State of New Jersey
INRIX
Chew, Yuli
Volkswagen

Comment:

Ford Motor Company

Off-Cycle Credits
Ford agrees with EPA's approach to allow provisions that would provide additional flexibility through introduction of advanced technologies that achieve real-world GHG emission reductions. Ford is willing to work with EPA and other OEMs to facilitate consumer focus groups, develop education training programs and develop simulation methods to verify other advanced technologies that demonstrate real-world GHG emission reductions. Ford agrees with the Alliance that this is best handled via manufacturer guidance letters, as these technologies emerge and are developed. [OAR-2009-0472-7082.1, p. 8]

Honda Motor Company

EPA proposes optional credit opportunities for "innovative technologies that reduce vehicle CO_2 emissions but the benefits are not captured in the 2 cycle test procedures. This proposal is welcomed by Honda, however, to assure fairness and transparency, Honda recommends that EPA publish information about each proposed technology credit as well as a brief description of the technology and allow a sufficient time for public comment. After considering the input from the public, EPA could establish a final rule after which the credit would become effective one

year later. This would create a level playing field and assure a thorough discussion of the proposed technologies and their credits. [NHTSA-2009-0059-0095.1, p.10]

Additionally, EPA proposes that the off-cycle technology "must not be significantly measurable over the Federal Test Procedure and the Highway Fuel Economy Test." Honda believes this is unfortunate, since a technology that has significant off-cycle benefits may also have some measurable benefits on the 2 cycle test (FTP and HFET). EPA should not deny such technologies that demonstrate some benefit on FTP and HFET. [NHTSA-2009-0059-0095.1, p.10]

EPA proposes that an OEM repeat the 5 cycle testing both with and without the proposed off-cycle technology. EPA's testing proposal works well if the technology cannot demonstrate any benefit on the FTP and HFET tests. On the other hand, if EPA agrees with Honda that it is reasonable to allow some benefit on the FTP and HFET tests, then a different comparison test is required, to avoid double-counting. [NHTSA-2009-0059-0095.1, p.10]

Honda proposes that only the US06, SC03 and Cold LA-4 be repeated with and without the proposed technology activated in order to accurately count off-cycle credits. (see Attachment 6 for examples). [NHTSA-2009-0059-0095.1, p.10] [[See NHTSA-2009-0059-0095.1, p.19 for Attachment 6]]

Mercedes-Benz (Daimler AG)

DAG also strongly supports the proposed credits for off-cycle technologies that are able to achieve substantial CO_2 reductions which, like A/C improvements, are not reflected in the federal test procedures. These credits acknowledge that technology improvements can reduce emissions and improve fuel efficiency in ways that are not measured strictly through tailpipe testing. The European Union has already begun a similar program recognizing these benefits. The current proposal will further develop and expand new technologies in this area.

DAG is committed to working with EPA to implement the proposed credit system. DAG concurs that the 5 cycle test is an appropriate starting point for measuring the emission reduction values of off-cycle technologies and that alternative pathways should also be available. In determining whether a particular technology is in widespread use, it will be important to take into account the vehicle segment. Only in that way can EPA ensure the widespread deployment of off-cycle technologies throughout the light duty fleet.

[OAR-2009-0472-7193.2, p.18]

First, the proposed rule includes incentives for early introduction of vehicle innovations that do not show up on the dyno test, but all of us know can have a significant effect on greenhouse gas emissions. For example, air conditioning refrigerants and eco-innovation such as solar panels result in a more significant environmental benefit than the effect it may have on the customer experience. The proposed rule encourages companies like ours to adopt these innovations regardless of the corresponding value that our customers might assign to these innovations. [These comments were submitted as testimony at the New York public hearing. See docket number OAR-2009-0472-4621, pp. 50.]

Association of International Automobile Manufacturers (AIAM)

As for the off-cycle credits, EPA should facilitate transparent and fair evaluation of both the off-cycle credits for technologies and of the technologies themselves, so that all companies would have a fair opportunity to avail themselves of the credits. EPA should publish proposed off-cycle approaches in the Federal Register as they are requested by a manufacturer, allow a reasonable amount of time for comment on the proposed approach, and then, if the request is granted, make the credits available one year after the final decision by the Agency. These comments on the off-cycle credits apply not only to the early credits but also to those that would be used in the 2012-2016 period. [OAR-2009-0472-7123.1, p.14]

Chrysler Group LLC (Chrysler)

The methodology for calculating off-cycle technology credits should not be defined for this rulemaking.

At the time of this Proposed Rule, there is no clear understanding of what off-cycle technologies currently exist or will be invented in the future. Setting specific test requirements to prove the value of such technologies is therefore premature. Regulations promulgated by this rulemaking should simply allow for the generation of off-cycle credits without setting a specific test procedure. As manufacturers wish to generate these credits, methodologies could be developed through future guidance. [NHTSA-2009-0059-0124, p.28]

Off-cycle Technology Credits should not be limited to only 'new or innovative' technologies.

The restriction of off-cycle technology credits to 'new or innovative' technologies is problematic. The initial application of any technology by a manufacturer involves some level of learning, regardless of whether the technology is completely new to the industry or innovative in its application. In addition, both terms would appear to restrict such credits to the initial application of the technology within a manufacturer's fleet; once implemented other vehicle applications and later model years may not receive credit for the technology. [NHTSA-2009-0059-0124, p.28]

Just as improvements to air conditioning systems will receive credit, improvements which are not otherwise captured by standard testing should also be given credit, regardless of how commonplace a certain technology becomes. [NHTSA-2009-0059-0124, p.28]

Off-cycle technology credits should be provided for the California 'Cool Car' program.

In June 2009, the California Air Resources Board approved new GHG standards for California vehicles that will impose increasingly stringent limits on the total transmission of solar energy (Tts) on glass used in light-duty vehicles and light-duty trucks. Those requirements, like the CO_2 standards proposed for the National Program, will take effect in MY 2012 and become increasingly stringent through MY 2016. Also, like the National Program, the new California standards, called the 'Cool Cars' regulation, are intended to reduce GHG emissions (and thus increase fuel economy) through the use of smaller, more efficient air conditioners. [NHTSA-2009-0059-0124, pp.28-29]

If California's final Cool Cars rule can not be met through compliance with the National Program, EPA and NHTSA should provide off-cycle technology credits for the efforts that manufacturers will have to undertake to meet the requirements of the Cool Cars rule. That recognition is appropriate from an environmental perspective, and will mitigate, to some extent. [NHTSA-2009-0059-0124, p.29]

Alliance of Automobile Manufacturers (Alliance)

Off-Cycle Credits

EPA has proposed allowing manufacturer the opportunity to earn off-cycle credits for new and innovative technologies that reduce CO_2. This Alliance supports the concept of providing credits as a way to further incentivize technology development in this area. However as proposed, the Alliance is concerned that the current proposal does not offer manufacturers enough certainty with regards to credit application and testing in order to take advantage of these credits. Furthermore, EPA's proposal does not offer a level playing field to all manufacturers in terms of possible credit availability. [OAR-2009-0472-6952.1, p. 53]

Recommendation:

Rather than attempting to quantify CO_2 reductions with a prescribed test procedure on unknown technologies at this time, EPA should handle credit application and testing guidelines via future guidance letters, as these technologies emerge and are developed. [OAR-2009-0472-6952.1, p. 53]

Hyundai Motor Company

We support off-cycle technology credits for technologies that provide a GHG benefit in the real world but that are not captured during the fuel economy test cycles. Off-cycle technology credits will incentivize innovative GHG reduction technologies.

Hyundai is concerned that it will be difficult to determine the real world use and/or benefits of the off-cycle credits. While EPA suggests that credits could be calculated using the 5-cycle fuel economy test cycle, this cycle will not demonstrate the benefits of many innovative fuel efficiency technologies, like green- or eco-driving guides, predictive cruise control, or econavigation routing. An example of the benefits of predictive cruise control is the ability to maximize fuel economy during hill climbs by reducing acceleration on the incline in anticipation of an oncoming decline. Preliminary studies of these technologies show a substantial fuel economy benefit, up to 12 percent, but such benefits would not be measurable on any dynamometer test cycle. Thus, in cases where the 5-cycle fuel economy test cannot provide meaningful measurement, EPA should allow a simple calculation of benefits based on good engineering judgment. We believe that off-cycle credits will be important for spurring technology and obtaining real world benefits; a simplified process to assess benefits will expedite implementation.

EPA also noted that the off-cycle technology credits are only available for innovative technologies that have not been widely adopted (74 Federal Register (FR) 49534). Hyundai believes that it may be appropriate to provide an off-cycle credit even once widespread adoption of an innovative technology has occurred. One example is the reflective glazing which California will require on vehicles beginning in MY 2012. California believes that there is a GHG reduction from the application of reflective glazing materials in motor vehicles; the glazing blocks solar heat absorption into a parked vehicle, resulting in a cooler vehicle interior and reduced air conditioner *(A/C)* use. The extension of off-cycle credits for technologies like reflective glazing would provide manufacturers with an incentive to adopt the technology not just in California but nationwide. The off-cycle credit should be used to encourage continued application of beneficial off-cycle technology, whether innovative or not. [OAR-2009-0472-7231.1, p.4]

Toyota Motor North America

EPA proposes the opportunity to earn off cycle credits for technologies that reduce CO_2, but where CO_2 reduction benefits are not captured over the 2-cycle test procedure used for fleet average standard compliance (e.g. off cycle). EPA plans to approve only technologies that are innovative, or novel approaches to reducing GHG emissions. EPA proposes a two-tiered process for demonstrating the CO_2 reductions not captured by the FTP and HFET test procedures. Manufacturers could determine benefit of the technology via the 5-cycle test methods used for fuel economy label values. Or, if existing test cycles are not adequate, EPA will advise manufacturers in developing test procedures to estimate the effectiveness of the technology. [OAR-2009-0472-7291, p.24]

Toyota agrees with the concept of providing credit for CO_2 reductions that can be reflected from off cycle contributions. In doing so, EPA is providing incentives to promote technology developments in this area. However, to fully take advantage of these credits, manufacturers require more certainty in determining credit application and testing requirements before making commitments to use these technologies. Toyota is concerned that the lack of specificity in the current proposal could result in inconsistent application of credits among manufacturers who are using the same technology. As a result, Toyota requests that EPA refrain from offering off cycle credit until the method to measure off cycle performance has been fairly established. [OAR-2009-0472-7291, pp.24-25]

BMW of North America, LLC (BMW)

Off-cycle technologies can deliver a viable contribution to reduce greenhouse gas emissions and to improve fuel economy. Therefore, BMW greatly appreciates that EPA has proposed off-cycle technologies for compliance flexibility in this rulemaking. To bring off-cycle technologies to the market, an efficient approval process based on already existing or adopted procedures should be implemented. Further, BMW strongly supports EPA's proposed approach for evaluating credits from off-cycle technologies. [OAR-2009-0472-7145.1, p.6]

Public Citizen and Safe Climate Campaign

EPA proposes to give automakers credits for certain advanced technologies that may reduce greenhouse gas emissions from motor vehicles, but for which the reductions cannot be measured by EPA's current five-cycle emissions test. Examples of such technologies are active aerodynamics, adaptive cruise control and solar panels on hybrids. The EPA does not provide details on how it proposes to estimate the value of these credits or the greenhouse gas emission reductions related to any given technology. Presumably, the credits would vary for each specific technology and specific vehicle on which it is installed. [OAR-2009-0472-7050.1, p.6]

The agency cites creating a market incentive for these technologies as motivation for providing them. While we acknowledge that it is possible that such credits may encourage manufacturers to install these technologies, we are skeptical that the credits would be sufficient to significantly increase technology penetration. Moreover, the setting of a strong, mandatory standard alone would provide ample incentive for manufacturers to pursue cost-effective technologies that reduce greenhouse gas emissions. In addition, manufacturers are likely to market vehicles with these technologies for reasons other than their environmental impact. For example, active aerodynamics can reduce road noise, something which may resonate strongly with consumers. Automakers have already begun to market adaptive cruise control as a safety technology, not an efficiency technology. There is especially little reason to give credits for technologies that automakers intend to install anyway. [OAR-2009-0472-7050.1, p.6]

EPA cites no quantitative estimate of the greenhouse gas emission reductions associated with these technologies, presumably because no sufficiently rigorous estimates are available. The agency has not developed tests to estimate the actual greenhouse gas emissions reductions from these technologies in a real world context. The proposal does not even suggest that EPA has contemplated how it would estimate real world emission reductions from these technologies. Without its own framework, the agency would then be dependent on each automaker to provide estimates of emissions reductions from off-cycle technologies, and then there is no guarantee of consistency in the test procedure used to develop the [OAR-2009-0472-7050.1, p.6] estimate. If the automakers conduct the tests, then there would likewise be no public participation in developing the tests. [OAR-2009-0472-7050.1, p.7]

EPA should not grant credits for off-cycle emissions, unless it also proposes test procedures for estimating the emissions reductions, comparing them to measured on-road reductions and ensuring that the industry will not be granted credits for technologies that amount to marketing gimmicks. Still, these credits, like those for advanced technology vehicles, may or may not provide an incentive for automakers to incorporate these technologies. These technologies in particular, since their impact cannot currently be measured on EPA's emissions test, seem unlikely to be motivated by regulation, but rather by consumer demand and other market forces. EPA must not grant the automakers credits for actions automakers would take in absence of the regulation. [OAR-2009-0472-7050.1, p.7]

Union of Concerned Scientists

UCS is supportive of credits generated by "off-cycle" technologies, as long as the off-cycle credits being given correspond to actual greenhouse gas emissions reductions yielded by the technology in a real-world environment. We support the notion of measuring the credits under

the 5-cycle test. However, the alternative option laid out in the proposed rulemaking, the case-by-case approach to assessing off-cycle credits, raises some concerns. While we wholeheartedly agree with EPA's position that "the [alternative option's] demonstration program should be robust, verifiable, and capable of demonstrating the real-world emissions benefit of the technology with strong statistical significance," the proposal does not appear to include any opportunity for public comment on the approach taken to quantify credits prior to the agency's acceptance of the approach. Given the broad number of stakeholders with experience in the issues pertaining to these technologies, we believe it would be prudent to add an additional step soliciting and heeding public comment on any "alternative" approach to assessing off-cycle credits before any credits are granted to manufacturers. [OAR-2009-0472-7181.1, p.11]

Natural Resources Defense Council

Off-Cycle Technology Credits Should Only Be Awarded for Real and Verifiable GHG Reductions
While NRDC appreciates EPA's efforts to evaluate GHG reduction technologies that are not identified under current compliance tests and to encourage continued innovation this area, EPA should not provide credits until such technologies can be verified as providing real and enforceable GHG reductions. As GHG reductions are identified and evaluated, EPA should consider the widespread adoption of these technologies when setting future standards. [OAR-2009-0472-7141.1, p. 18]

For MY 2012-2016, EPA should only award off-cycle credits to vehicles after the agency has verified actual GHG reductions through certification testing. The certification process should be initiated by an automaker petitioning for off-cycle credit consideration. Upon receipt of the petition, EPA should propose a test procedure for public review and only allow its use for credit generation after consideration of stakeholder comments. The magnitude of the credits offered per vehicle should account for any degradation in the off-cycle technology over the life of the vehicle and not base the credits solely on performance during the test. Additionally, test procedures should be subjected to period review to keep up with the latest technology advancements both in the off-cycle technologies and the other vehicle characteristics as each may impact the level of GHG reductions that should be attributed to the off-cycle technology. Finally, EPA should ensure that the benefits of the technology can be verified and enforced in use. [OAR-2009-0472-7141.1, pp.18-19]

Sierra Club

We support limited "off-cycle" technology credits, as long as they represent accurate, verifiable emissions reductions. It is critical that EPA establish an effective certification process that is open for public comment. We note that some have proposed that technologies such as traffic alerts that could redirect drivers away from traffic jams and other "eco" driving technologies be eligible for CAFE credits. When determining the eligibility of technologies, EPA should be clear that only those which relate to the vehicle, and not behavior-changing technologies, should be eligible. Further, technologies that receive off-cycle credits should be periodically reassessed to ensure the continued accuracy of emissions reductions. [OAR-2009-0472-7278.1, p.15]

State of New Jersey

In addition, the Department supports the option to allow manufacturers to generate credits through 'off-cycle' technologies that have been verified by the USEPA or the CARB. [OAR-2009-0472-7109.1, p.8]

Chew, Yuli

I support "off-cycle" technologies that have been accepted by SAE or CARB. CARB's study indicated that air-conditioning may use as much as 5.5% of the total light-duty vehicle fuel use. As such, I support giving GHG credits for innovative measures such as Cool Car Standard proposal in CARB http://www.arb.ca.gov/regact/2009/coolcars09/coolcars09.htm Manufacturers can claim credits up to verifiable hot soak performance tests on the GHG emission reductions achieved. [OAR-2009-0472-7042.1, p.2]

Volkswagen

Volkswagen also supports the flexibility provided in the regulation to allow credit for real world GHG reductions that are not captured on the relevant test cycles. We believe that these GHG reductions can be significant and can also offer significant benefit to consumers. We urge the EPA to maintain a viable pathway and mechanism for evaluating these types of technologies. Volkswagen also notes that some technologies may offer benefits on the relevant test cycles while also offering either significant or greater benefits to customers in real world usage. We propose that EPA accommodate this type of technology that may have benefit both on and off-cycle. An example of this could be various forms of stop/start systems. It is possible that certain designs or strategies for stop/start systems will yield varied results over the fuel economy test cycles versus off-cycle modes. For example, Volkswagen believes some stop/start systems may yield a 1-2 percent improvement over the fuel economy test cycles but yield an 8 percent benefit in real world driving for the customer. Volkswagen plans to discuss this type of technology in more detail with EPA staff in the future, but for the purposes of this rulemaking it is important to establish that CO_2 performance credit is possible and that a fair process is in place to evaluate and grant the correct credit for a given technology. In addition, Volkswagen recommends that credits from CO_2 performance technology under real world driving conditions should be in effect over the full time period of this regulation. Volkswagen also notes that measurable and documented real world GHG reductions due to technology related improvements to vehicles should not be strictly related to new or innovative technical measures - it is possible that simple, known technology could yield significant real world GHG reductions.

EPA Response:

Public Citizen and Safe Climate Campaign commented that "while we acknowledge that it is possible that such credits may encourage manufacturers to install these technologies, we are skeptical that the credits would be sufficient to significantly increase technology penetration. Moreover, the setting of a strong, mandatory standard alone would provide ample incentive for manufacturers to pursue cost-effective technologies that reduce greenhouse gas emissions. In addition, manufacturers are likely to market vehicles with these technologies for reasons other

than their environmental impact. For example, active aerodynamics can reduce road noise, something which may resonate strongly with consumers. Automakers have already begun to market adaptive cruise control as a safety technology, not an efficiency technology. There is especially little reason to give credits for technologies that automakers intend to install anyway." In response, EPA disagrees that setting a strong mandatory standard alone would provide ample incentive for technologies that reduce emissions where those emissions reductions not captured by the certification test procedures. Indeed, there is some potential for the opposite result, since manufacturers are less likely to develop technologies which bring them no benefit in complying with the standards. Also, EPA has taken a rigorous approach in determining the type of technologies that are eligible for credits in order to provide manufacturers with an incentive to develop these new technologies. One of the primary criteria is that the technologies be new and not in widespread use. EPA does not believe it would be practical to also try to predict that the application of the new technology would occur at the same rate or not at all without the opportunity to generate credits. Nor does EPA believe that in determining eligibility that it should matter if candidate technologies offer additional benefits to consumers in addition to emissions reductions, only that the technology is new and innovative and does not provide significant emissions reductions on the 2-cycle test.

The same commenter stated that "the proposal does not even suggest that EPA has contemplated how it would estimate real world emission reductions from these technologies." The final rule in fact provides that if the 5-cycle option is utilized, the manufacturer must determine CO_2 emissions both with and without the technology installed and operating. Section 86.1866-12 (d) (2) (i) goes on to detail precisely how this comparison is to be effectuated. Manufacturers using an EPA-approved alternative methodology must make the same demonstration. Section 86.1866-12 (d) (2) (ii) (B) and (C). In addition, the technology must be demonstrated over the vehicle's useful life, the manufacturer must account for deterioration, and the technology must improve CO_2 emissions beyond the driving conditions of the 2-cycle (FTP and HFET) test procedures. Section 86.1866-12 (d) (1) (ii) and (iii).

EPA is finalizing off-cycle credit provisions for eligible innovative technologies, defined as technologies that are relatively newly introduced in one or more vehicle models, but that are not yet implemented in widespread use in the light-duty fleet. EPA will not approve credits for technologies that are not innovative or do not provide novel approaches to reducing greenhouse gas emissions. Manufacturers must obtain EPA approval for new and innovative technologies at the time of vehicle certification in order to earn credits for these technologies at the end of the model year. This approval must include the testing methodology to be used for quantifying credits. Further, any credits for these off-cycle technologies must be based on real-world GHG reductions not significantly captured on the current 2-cycle tests and verifiable test methods, and represent average U.S. driving conditions.

EPA is finalizing a two-tiered process for demonstrating the CO_2 reductions of an innovative and novel technology with benefits not significantly captured by the FTP and HFET test procedures. First, a manufacturer must determine whether the benefit of the technology could be captured using the 5-cycle methodology currently used to determine fuel economy label values. EPA established the 5-cycle test methods pursuant to section 206 (h) of the Act to better represent real-world factors impacting fuel economy (among other things), including higher speeds and

more aggressive driving, colder temperature operation, and the use of air conditioning. If this determination is affirmative, the manufacturer must follow the procedures described below (as codified in today's rules). If the manufacturer finds that the technology is such that the benefit is not adequately captured using the 5-cycle approach, then the manufacturer would have to develop a robust methodology, subject to EPA approval, to demonstrate the benefit and determine the appropriate CO_2 gram per mile credit. As discussed below, EPA is also providing opportunity for public comment as part of the approval process for such non-5-cycle credits.

EPA received a few comments regarding the 5-cycle approach. Some commenters were supportive of the 5-cycle approach. Although not commenting directly on the 5-cycle testing methodology, the Alliance and some manufacturers raised general concerns that the proposed approach did not offer manufacturers enough certainty with regard to credit applications and testing in order to take advantage of the credits. The Alliance further commented that the proposal did not provide a level playing field to all manufacturers in terms of possible credit availability. The Alliance recommended that rather than attempting to quantify CO_2 reductions with a prescribed test procedure on unknown technologies, EPA should handle credit applications and testing guidelines via future guidance letters, as technologies emerge and are developed.

EPA believes that the 5-cycle testing methodology is one clear and objective way to demonstrate certain off-cycle emissions control technologies, as discussed above. It provides certainty with regard to testing, and is available for all manufacturers. As discussed below, there are also other options for manufactures where the 5-cycle test is not appropriate. EPA is retaining this as a primary methodology for determining off-cycle credits. For technologies not able to be demonstrated on the 5-cycle test, EPA is finalizing an approach that will include a public comment opportunity which we believe addresses commenter concerns regarding maintaining a level playing field.

EPA received several comments recommending that the approval process include an opportunity for public comment. As noted above, some manufacturers are concerned that there be a level playing field in terms of all manufacturers having a reasonable opportunity to earn credits under an approved approach. Commenters also want an opportunity for input in the methodology to ensure the accuracy of credit determinations for these technologies. Commenters point out that there are a broad number of stakeholders with experience in the issues pertaining to the technologies that could add value in determining the most appropriate method to assess these technologies' performance. The Alliance, Ford, Chrysler, and Toyota commented that the procedures should be established via future guidance documents but did not mention needing a public opportunity for comments. EPA agrees with comments supporting a public process, and is including an opportunity for public comment as part of the approval process. If and when EPA receives an application for off-cycle credits using an alternative non 5-cycle methodology, EPA will publish a notice of availability in the Federal Register with instructions on how to comment on draft off-cycle credit methodology. The public information available for review will focus on the methodology for determining credits but the public review obviously is limited to non-confidential business information. The timing for final approval will depend on the comments received. EPA also believes that a public review will encourage manufacturers to be thorough in their preparation prior to submitting their application for credits to EPA for approval.

EPA will take comments into consideration, and where appropriate, work with the manufacturer to modify their approach prior to taking final action regarding any off-cycle credits methodology. EPA will give final notice of its determination to the general public as well as to the applicant. Off-cycle credits would be available in the model year following the final approval. Thus, it will be imperative for a manufacturer pursuing this option to begin the process as early as possible.

Ensuring Real-world Emissions Reductions

EPA received comments that credits should be real and verifiable and should take into account deterioration. The final rule requires exactly this: credits can be generated "by implementing innovative technologies that have a measurable, demonstrable, and verifiable real-world CO_2 reduction." Section 86.1266 (d). Credits thus must be based on real additional reductions of CO_2 emissions and must be quantifiable and verifiable with a repeatable methodology. Moreover, as proposed, manufacturers must quantify CO_2 reductions associated with the use of the innovative off-cycle technologies such that the credits could be applied on a g/mile equivalent basis, as is the case with A/C system improvements. Again as proposed, the technologies upon which the credits are based would be subject to full useful life compliance provisions, as with other emissions controls. Unless the manufacturer can demonstrate that the technology would not be subject to in-use deterioration over the useful life of the vehicle, the manufacturer must account for deterioration in the estimation of the credits in order to ensure that the credits are based on real in-use emissions reductions over the life of the vehicle. We believe including an opportunity for public comments as part of the approval process also helps address commenters' concerns regarding ensuring that credits are real and verifiable because interested parties will have an opportunity to evaluate these aspects of the credits.

Test Procedures

EPA also received comments that the off-cycle credits provision highlights the inadequacy of current test procedures, and that there is a clear need for updated certification test procedures. As discussed in preamble section III. B., EPA believes the current test procedures are adequate (and indeed, essential as a practical matter, and legally mandated for the CAFE standards) for implementing the standards finalized today. However, EPA is interested in improving test procedures in the future and believes that the off-cycle credits program has the potential to provide useful data and insights both for the 5-cycle test procedures and also for other test procedures that capture off-cycle emissions.

New and Innovative Criteria

Some commenters also raised concerns regarding the possibility of giving off-cycle credits for technologies that manufacturers are already using, and would therefore have serious concerns about an approach that did not include the eligibility requirements for new and innovative technologies. EPA agrees, and is thus finalizing the "new and innovative" criteria as proposed. That is, the potential to earn off-cycle credits will be limited to those technologies that are new and innovative, are introduced in only a limited number of vehicle models (i.e., not in widespread use), and are not significantly captured on the current 2-cycle tests. This approach

will encourage future innovation, which may lead to the opportunity for future emissions reductions.

EPA received comments from a few manufacturers that the "new and innovative" criteria should be broadened. The commenters pointed out that there are technologies already in the marketplace that would provide emissions reductions off-cycle and that the rule should provide further incentives for their use. Volkswagen and Honda commented that some technologies that provide reductions on the 2-cycle test should be eligible for off-cycle credits. Volkswagen suggested that, for example, off-cycle credits should be given for start-stop technologies. EPA's modeling projects that start-stop technology will be widely used by manufacturers in meeting the CO_2 standards. Start-stop technology already achieves a significant CO_2 benefit on the current 2-cycle tests, which is why many manufacturers have announced plans to adopt it across large segments of the fleet. EPA recognizes there may be additional benefits to start-stop technology beyond the 2-cycle tests (e.g., heavy idle use), and that this is likely the case for other technologies on which manufacturers will rely to meet the MY2012-2016 standards. EPA plans to continue to assess the off-cycle potential for these technologies in the future. However, EPA does not believe that off-cycle credits should be granted for technologies which we expect manufacturers to utilize widely throughout the fleet in meeting the CO_2 standards. Such credits could lead to double counting, as there is already some CO_2 benefit over the 2-cycle tests. EPA expects that most if not all technologies that significantly reduce CO_2 emission on the 2-cycle test will also reduce CO_2 emissions during the wide variety of in-use operation that is not directly captured in the 2-cycle test. This is no different than what occurs from the control technology on vehicles for criteria pollutants. Thus, the catalytic converter and other emission control technology operate to reduce emissions throughout in-use driving, and not just when the vehicle is tested on the specified test procedure. The aim for this off-cycle credit provisions is to provide an incentive for technologies that achieve real-world CO_2 emission reductions but which normally would not be chosen as a GHG control strategy because their GHG benefits are not significantly measured on the specified 2-cycle test. It is not designed to provide credits for technology that does provide significant GHG benefits on the 2-cycle test and, as expected, will also typically provide GHG benefits in other kinds of operation.

Some commenters raised the "Cool Car" initiative in California as a potential source of off-cycle technology credits. The commenters note that window glazing technology provides off-cycle emissions reductions by reducing the demand on A/C systems. EPA did not propose and is not finalizing credits specifically for this technology, as it did for A/C system credits. EPA also is not including a final determination regarding the eligibility of any particular off-cycle technologies in this rulemaking, as these are case-by-case determinations made according to the procedures set out in 86.1866-12 (d). Manufacturers must apply for off-cycle credits, which includes making the case for why the technology is eligible for credits according to EPA's criteria, and their proposed methodology for determining the amount of credits, as described above.

Additional Comments on Specific Technologies

Organization:INRIX

Herzlich Consulting, Inc.
PurigeN98

Comment:

INRIX

INRIX wishes to draw the agencies' attention to the emergence of deeply 'connected vehicles' and their potential impact on GHG emissions and fuel economy. INRIX supplies traffic and routing information to SYNC2-equipped vehicles, Ford Motor Company's groundbreaking in-vehicle information system as part of the Traffic, Directions and Information service available on Ford MY 2010 and beyond equipped vehicles. Since initial launch in May 2009, tens of thousands of Ford vehicles have activated services that allow their vehicles to get to their destination more directly via turn-by-turn navigation, and more quickly and safely, by alerting drivers to and routing drivers around traffic congestion, incidents, construction and other events that lengthen the time a specific trip takes. Early indications are that a significant percentage of trips are being re-routed to avoid trouble spots, impacting the distance traveled and time spent traveling and idling. [NHTSA-2009-0059-0079.1, pp.1-2]

SYNC is a strategic element of Ford's North American automobile business with over 80% of vehicles Ford sells now equipped with SYNC. Standard with SYNC is three years of the Traffic, Directions and Information service built-in the purchase price. The ground-breaking technology and business model is creating a groundswell of activity across the auto industry to respond and get new vehicles as deeply connected as SYNC. As a result, during the time period of this rulemaking, millions of vehicles sold will be 'connected' with the expressed purpose of increasing trip efficiencies, directly impacting fuel use/efficiency and GHG emissions for specific trips. Connected vehicles are more efficient than non-connected vehicles and clearly fit the policy framework of reducing GHG emissions and fuel consumption per unit of economic activity. [NHTSA-2009-0059-0079.1, p.2]

As air conditioners and flex fuel vehicles are presently identified in the NPRM as candidates for credits, we strongly urge the EPA and NHTSA to coordinate closely with the USDOT's Research and Technology Administration's ITS Joint Program Office to research the impacts of connected vehicles on GHG emissions and MPGs and to establish the appropriate CAFE and/or CO_2 credit regime at the earliest possible date. With our increasing pool of trip data, INRIX is ready to assist the agencies in this effort. [NHTSA-2009-0059-0079.1, p.2]

Connected vehicles are smarter, more efficient vehicles. Public policy should promote their adoption as benefits will accrue to the broader nation, not just the individuals making better trips. [NHTSA-2009-0059-0079.1,p.2]

Herzlich Consulting, Inc.

Please include my previous August 6, 2009 comments (below) sent to Docket Management in response to NHTSA's call for public input into TREAD ACT tire reliability considerations. High purity nitrogen inflation of tires is also directly applicable to your call for technologies eligible

for 'Off-cycle Innovative Technology Credits'. Even though this letter describes tire reliability advantages gained by high purity nitrogen inflation, better inflation pressure retention resulting from nitrogen's molecular structure offers improved fuel economy (lower rolling resistance) for the billion tires travelling about 3 trillion miles per year on our roads. Tire science and peer reviewed rubber oxidation and diffusion chemistry already establishes that the benefits of high purity nitrogen inflation are real and offer an easy win-win consumer/EPA conservation technology that is 'shovel ready' to contribute to meeting EPA's off-cycle technology carbon footprint goals. [OAR-2009-0472-4567, p. 1]

Attached is a current CV that quantifies the training and experience that I base my opinions on. Upon review of the NPRM, I would like to offer certain observations and recommendations relevant to additional opportunities to enhance tire reliability and your TREAD ACT mission. Inflation maintenance is an accepted requirement for satisfactory tire reliability. It is a demonstrated scientific fact that nitrogen inflation offers longer term pressure retention than air. It is a proven reality which also offers other potential tire performance improvements related to the accepted chemical principles describing the oxidative weakening of the tire's structure. The reduced heat and strain generation associated with proper inflation will in itself slow the degradation chemistry. However the improved pressure retention offered by nitrogen will offer additional value if the purity of nitrogen in the tire reduces the oxygen content to less than 5%. This is a scientifically proven in papers by Baldwin of Ford. The Michelin high oxygen durability test (which I support) demonstrates the oxidative weakening effect even with a superior undamaged innerliner under short term test conditions. Tokita (Uniroyal) and Waddell (ExxonMobil) are just a few of the studies proving the advantage for high purity nitrogen inflation. Industry compounders (tire chemists) competently recognize this effect and address it with complex, difficult and costly antioxidant systems. However, it is realized that these systems are subject to fugacity as well as other longer term potency reductions. Until recently, nitrogen enrichment equipment reliability and a lack of infrastructure was a legitimate reason for the passive approach the industry took toward a more strongly worded high purity nitrogen inflation recommendation. A nitrogen inflation infrastructure is now commercially in place. The marketing segment (dealers) of the industry and State regulators are already moving forward (ie: CA and PA). More knowledgeable new car dealers are making it part of the prep process. I would estimate many tens of millions of tire miles are already benefitting from this simple tire enhancement technology. Higher pressure tires (lower rolling resistance) and smaller air chamber designs will magnify and make the advantages of high purity nitrogen pressure retention even more valuable to the objectives of the TREAD ACT as well as the environment. NHTSA and the industry should now update it's current passive, non-objecting position and take a more proactive role recognizing high purity nitrogen as the inflation method of choice for best tire performance. Despite improvements in innerliner permeability technology, the value of high purity nitrogen inflation will continue to be of important value when addressing real world causes of oxidative intra-carcass pressurization that results when the innerliner function is compromised by impacts, mounting bead damage, punctures, improper repairs and structural deficiencies. [OAR-2009-0472-4567, pp. 1-2]

Conclusions: Reliable high purity nitrogen enrichment technology is now commercially and economically available. The service infrastructure is rapidly developing or already in place,

making past technical and market related objections no longer valid. [OAR-2009-0472-4567, p. 2]

PurigeN98

1. Reference

Federal Register / Vol. 74, No. 186 / Monday, September 28, 2009 / Proposed Rules Docket ID No. EPA-HQ-OAR-2009-0472 and/or NHTSA–2009–0059 Off-cycle technology credits, on page 49534 of the Federal Register / Vol. 74, No. 186 / Monday, September 28, 2009. [OAR-2009-0472-7201, p.1]

Off-Cycle Innovative Technology Credits - EPA is proposing a credit opportunity intended to apply to new and innovative technologies that reduce vehicle CO_2 emissions, but for which the CO_2 reduction benefits are not captured over the 2-cycle test procedure used to determine compliance with the fleet average standards (i.e., "off-cycle"). Eligible innovative technologies would be those that are relatively newly introduced in one or more vehicle models, but that are not yet implemented in widespread use in the light-duty fleet. Further, any credits for these off-cycle technologies must be based on real-world greenhouse gas emission reductions not captured on the current 2-cycle tests and verifiable test methods, and represent average U.S. driving conditions. [OAR-2009-0472-7201, p.1]

2. Suggested program

"Inflation of vehicle tires with Nitrogen at automotive manufacturing plants and at automotive service providers" [OAR-2009-0472-7201, p.1]

a. Why should EPA consider this as part of the Off-Cycle Innovative Technology Credits program?

Vehicle tire under-inflation is a rampant problem in our country. While it has sometimes been dismissed as a minor issue, it had become a campaign issue when Candidate Barack Obama had stated that if all Americans inflated their tires properly ……., they could save as much oil as new offshore drilling would produce. Time magazine had acknowledged it is as "the cheapest, cleanest, quickest and easiest way to ease our addiction to oil, reduce our pain at the pump and address global warming. [OAR-2009-0472-7201, p.2]

Benefits of inflating tires with nitrogen are not apparent in the current CAFÉ standard test methods because use over time and consumer behavior are not fully accounted for. In short term tests, tires perform very similarly when filled with either clean dry air or pure nitrogen. However, benefits of pure nitrogen become noticeable over time as tires filled with nitrogen retain pressure for longer time, combined with the stark reality that consumers "DO NOT" check tire pressure properly and do not top off tires regularly. Filling tires with nitrogen will significantly reduce the impact and severity of tire under-inflation and reduce vehicle fuel consumption, increase tire life and reduce CO_2 emissions. [OAR-2009-0472-7201, p.2]

b. What is the problem that Nitrogen tire inflation program addresses?

i. Filling tires with nitrogen will partially address the rampant tire under-inflation problem in our country as is well documented by the following information.

1. The U.S. DOE estimated that under-inflated tires wasted a total of 1.2 billion gallons of fuel used in cars and LTs in 2005.

2. 'A motorist survey this year by the RMA found that 85% of American drivers do not properly check tire inflation pressure. This is an alarming statistic since tires are the only part of a vehicle in contact with the road and a critical vehicle safety component,' said James MacMaster, chairman of the RMA Board of Directors.

3. EPA's Emission Facts (EPA420-F-00-013) indicates that a 1% decrease in CO_2 emissions for every 1% decrease in fuel consumption. Using emission data provided in the EPA fact sheet, the 1.2 billion gallons of wasted fuel translates to 12 million tons/yr of extra CO_2 emissions resulting from under-inflated tires.

4. The National Highway Traffic Safety Administration (NHTSA) estimates that under-inflated tires are a factor in 660 fatalities and 33,000 crash injuries each year. Additional research shows that 27 percent of passenger cars on U.S. roadways are driven with one or more substantially under-inflated tire, according to a NHTSA survey. [OAR-2009-0472-7201, p.2]

5. 'Drivers across the U.S. can battle rising gas prices by simply maintaining proper tire inflation,' said Takao Oishi, Yokohama's CEO and president. 'Current statistics indicate that 82 million vehicles have under-inflated tires, which means more rubber is hitting the road and, accordingly, miles-per-gallon is lessened. In fact, tire experts speculate that 2.8 billion gallons of gas is wasted by U.S. drivers each year simply because they're driving on under-inflated tires.'

6. The National Highway Traffic Safety Administration estimates that proper tire inflation could help save about 49-79 lives and prevent 6,585 to 10,635 injuries per year. (Source: National Highway Traffic Safety Administration Study on Under-Inflated Tires, August 2001).

7. The Rubber Manufacturer's Association estimates that 250,000 car crashes a year result from improperly inflated tires. [OAR-2009-0472-7201, p.3] [[See Docket Number OAR-2009-0472-7201, pp.3-7 for a detailed discussion on the following topics; What are the benefits of Nitrogen tire inflation, what are the potential costs, is there a cost benefit analysis to show the total benefits and costs of NTI on a national basis, are there technical studies conducted to prove NTI is superior, where is NTI used correctly, what are the future trends in tire manufacturing and what will be the impact of nitrogen.]]

EPA Response:

EPA appreciates the comments and understands that the technologies described by these commenters have the potential to result in emissions reductions under certain circumstances as well as other benefits for consumers. EPA is not establishing a specific credit for these

technologies in this rulemaking, as it is for A/C systems. A specific credit for "connected vehicles" or nitrogen tire inflation was not considered in the proposal. For off-cycle credits, it will be the responsibility of the manufacturers to apply for credits, if they so choose, and to show why the technology is eligible under the new and innovative technology criteria. Also, manufacturers not using the 5-cycle test procedure, as would likely be the case for the technology described by the commenters, must quantify emissions reductions, as discussed above. EPA is not making eligibility determinations on specific technologies as part of this rulemaking. However, we note that if the technology is in widespread use it may be difficult for the manufacturer to make the case that it is a new and innovative technology. With regard to nitrogen tire inflation, EPA believes manufacturers in determining credits would also need to address concerns regarding the fact that tires do not last the life of the vehicle and there would be some need to refill tires. There is no guarantee that consumers would use nitrogen during these tire-refilling events.

Diesel Fuel Upstream Emissions

Organization: U.S. Coalition for Advanced Diesel Cars

Comment:

For more than 20 years, EPA has been concerned with 'off-cycle' emissions that occur in the real-world but are not measured on the FTP or HFET drive cycles that control vehicle design, technology selection and calibration. In its 2006 label rulemaking, EPA made this point clear:

'EPA had become concerned that the FTP omitted many critical driving modes and conditions that existed in actual use, and that emissions could be substantially higher during these driving modes compared to the FTP. Manufacturers frequently designed their vehicles' emission control systems to meet the specified FTP test conditions, often neglecting emissions control over other driving conditions, resulting in higher real-world emissions.' [OAR-2009-0472-7496, p.12]

Congress called for action under sections 206(h) and 202(j) of the Clean Air Act Amendments of 1990, leading EPA to develop new 'supplemental' test procedures that were designed to reflect the real-world driving conditions where fuel is consumed and emissions are created. By 2006, these supplemental test procedures became part of the 5-cycle methodology used by EPA to reflect real-world city, highway and combined fuel economy for light duty vehicles. As above, however, the basis for fleet average performance under CAFE and the proposed GHG rules has not been updated. [OAR-2009-0472-7496, p.12]

In the current joint NPRM, EPA and NHTSA continue to state the importance of linking automotive technology development, production and implementation to reality-based accounting procedures designed to assure maximum real-world reductions in fuel consumption and GHG emissions. In addition to the 'zero g/mile' treatment for electricity that EPA states may be appropriate on an interim basis but not long-term, there are several other off-cycle credit mechanisms proposed:

-Credits for more energy efficient mobile air conditioners (MAC). Because the MAC is not turned on during the FTP or HFET tests, these MAC, efficiency credits would be available to manufacturers only if they can be demonstrated to measurably reduce GHG emissions in real-world, off-cycle conditions.
-Credits for MAC systems designed to reduce the probability of refrigerant leaks. In the event of a leak, chemical refrigerants contribute GHGs to the atmospheric inventory.
-Credits for advanced, low global warming potential (GWP) MAC refrigerants that minimize the GHG inventory impact even in the event of a real-world leak.
-Flex Fuel Vehicle (FFV) credits for vehicle which, for example, can operate on either E85 or E10 gasoline in the future. Through 2016 and beyond, EPA will recognize the holistic, well-to-wheel performance of the renewable fuel content by zeroing out the GHG emissions produced. under EPA vehicle test procedures that are attributable to the bio component of that fuel. In other words, the up-stream, 'well-to-tank' GHG benefits of the renewable component are counted as an offset to the 'tank-to-wheels' GHG emissions EPA measures in its laboratory vehicle certification calculations.
-Other off-cycle credits for technologies such as solar roof panels, active cruise control and active aerodynamics. These credits are proposed to be exclusively available for 'new and novel' technologies but only after robust demonstration of off cycle, real-world GHG reductions not captured on the 2-cycle tests. [OAR-2009-0472-7496, pp.12-13]

The Coalition applauds EPA and NHTSA for championing reality-based solutions to our national petroleum end GHG reduction objectives. In each of the credit mechanisms described above, the agencies demonstrate the importance of controlling off-cycle emissions through a holistic approach that is not chained exclusively to a pair of 40-year old test procedures. Each of these reality based compliance features demonstrates recognition of a simple truth: the success of the proposed regulations will be based on the daily reductions in petroleum barrels and well-to-wheel GHG tons, not on a 'fleet average' compliance certificate for the regulated parties. And to achieve those daily reductions, vehicles employing technologies must appeal to U.S. consumers and must sell in high annual volumes. [OAR-2009-0472-7496, p.13]

The universe of possible fuels for light duty vehicles contains relatively few that have a higher energy density than gasoline. Diesel is one of those fuels. A gallon of diesel has 11 percent more energy than a gallon gasoline (and a gallon of B10 has 12 percent more energy than a gallon of E10). Because of this energy density, the transportation and distribution of diesel fuel to users around the country produces less GHG per usable unit of energy . Additionally, the refining of diesel fuel requires less energy and produces fewer GHG emissions compared to a gasoline baseline. Taken together, these reduced off-cycle emissions contribute additional benefits to society when high density diesel is substituted for lower density gasoline. Unlike its treatment of FFVs and other credit mechanisms proposed, however, EPA is not proposing to count these real diesel GHG offsets. According to recent EPA research, the up-stream GHG emissions associated with refining, transporting, distributing and storing transportation fuels. [OAR-2009-0472-7496, p.13]

For every gallon of diesel fuel substituted for a gallon of gasoline, an off cycle benefit of 280 GHG grams occurs. Returning to the pickup truck example shown on page 12, in which a 24 mpg diesel engine is sold in place of the standard 18 mpg engine, the 3,700 lifetime gallons of

fuel saved would also generate an off-cycle GHG benefit of 1 metric ton. Over 221,199 lifetime miles traveled, this is the equivalent of an off cycle credit of 4.7 grams per mile. This value is on the order of the maximum MAC efficiency credit of 5.7 g/mile that EPA proposes under its off-cycle credit mechanism. [OAR-2009-0472-7496, pp.13-14]

Clearly, the off cycle benefits of diesel fuel should be comprehended in EPA's historic GHG rulemaking process as these benefits are already documented in the agency's technical research. Since EPA proposes off-cycle credit mechanisms to incentivize such solutions as roof-top solar panels, surely the Administrator recognizes a parallel disincentive exists for proven technologies that are deliberately excluded from the off-cycle credit mechanism. We urge EPA to adopt rules that comprehend the holistic, full-cycle GHG performance recognizing that vehicles and fuels work as a system in our national efforts to reduce the CO_2 inventory and petroleum consumption. [OAR-2009-0472-7496, p.14]

EPA Response:

The commenter is recommending broadening the off-cycle credits concept, which is focused on the off-cycle benefits of new and innovative vehicle technologies, to include potential upstream emissions reductions associated with fuels. The commenter notes that diesel fuel has higher energy density than gasoline and comments "[b]ecause of this energy density, the transportation and distribution of diesel fuel to users around the country produces less GHG per usable unit of energy. Additionally, the refining of diesel fuel requires less energy and produces fewer GHG emissions compared to a gasoline baseline. Taken together, these reduced off-cycle emissions contribute additional benefits to society when high density diesel is substituted for lower density gasoline." Including these types of potential upstream benefits is beyond the scope of the proposal, as EPA did not propose or seek comments on such a concept. EPA focused its off-cycle credits proposal on vehicle improvements and does not believe it is appropriate to include life-cycle fuels emissions in determining off-cycle credits. Please see Section 5.7.3, Incentives for Advanced Technology Vehicles, for a discussion of how EPA is addressing upstream emissions of electric vehicles and why EPA is not applying an upstream emissions approach to other fuel types. Please also see Section 3.4 regarding additional comments concerning upstream emissions attributable to fuels.

Additional Comments

Organization: United Auto Workers

Comment:

We are also supportive of EPA's proposal to provide compliance flexibility through a multiplier for electric-drive technologies and for so-called off-cycle technology credits. We believe strongly that these proposals will provide a desirable incentive to bring into production advanced fuel-saving technologies that have the potential to radically reduce the greenhouse gas emissions from motor vehicles. Although we recognize that this will cause a slight near-term reduction in the total amount of greenhouse gas emissions avoided, it will hasten the day when these technologies can be produced in large volumes. This will ultimately result in greater emissions

reductions in the medium and long term because of the cost reductions expected with increased volumes of these advanced technologies. [OAR-2009-0472-7056.1, p.3]

EPA Response:

EPA appreciates the supportive comments. EPA believes the comments regarding a slight near-term reduction in the total greenhouse gas emissions avoided was in reference to proposed advanced technology vehicle credits. Comments on this topic are addressed in Section 5.7.3. EPA is taking several steps, discussed above, to ensure that off-cycle credits are based on actual emissions reductions and therefore EPA does not believe off-cycle credits will result in a loss of emissions benefits.

5.7.5. Early Credit Options

5.7.5.1. Credits Based on Early CO_2 Reductions

Organization: Ford Motor Company
Association of International Automobile Manufacturers (AIAM)
Chrysler Group LLC (Chrysler)
Alliance of Automobile Manufacturers (Alliance)
Volkswagen Group of America (Volkswagen)
Toyota Motor North America
Public Citizen and Safe Climate Campaign
Union of Concerned Scientists
Natural Resources Defense Council
Sierra Club
California Air Resources Board
National Automobile Dealers Association (NADA)
State of New Jersey
New York State Department of Environmental Conservation
Mass Comment Campaign (2,332) (unknown organization)
South Coast Air Quality Management District
Environment Michigan
Chew, Yuli
Seal, Kathy

Comment:

Ford Motor Company

Early Credit Flexibility and Pathways

The agencies' proposal to provide for the use of early credits in the 2009 -2011 model years is a reasonable approach. The early credit pathways provide flexibility and lead-time in order to bridge the stair-step increase in stringency between the 2011 MY CAFE standards and the

aggressive GHG reduction targets in the 2012-2016 timeframe. The EPA proposal recognizes the GHG reduction technology being incorporated into the current fleet and rewards manufacturers for over-complying with the standards. The GHG reduction technology being implemented on the current fleet provides the nation with the ability to track real GHG reductions immediately. [OAR-2009-0472-7082.1, p. 5]

Association of International Automobile Manufacturers (AIAM)

AIAM supports EPA's proposed "four pathways" approach for earning early "fleet average" credits as well as the early air conditioning, advanced technology, and off-cycle credits. All of the proposed credits are designed to appropriately reward manufacturers that achieve levels of efficiency that exceed expected levels.

EPA invited comment on whether the proposed early credits provide a "windfall" and whether the credits reward "real world" emission reductions. EPA does not explain what is meant by "windfall" credits. In our view, the CAFE program and the California greenhouse gas program provide a general benchmark for appropriate levels of vehicle efficiency for the 2009-2011 period. Early credits would reward companies that exceed this benchmark. In order to qualify for credits under EPA's proposal, manufacturers would have to offer vehicles that achieve efficiency levels that exceed typical current levels. Any resulting credits would truly be earned, not a windfall, and would result in real world fuel savings and lower greenhouse gas emissions. [OAR-2009-0472-7123.1, pp. 13-14]

In the public hearings on the proposed standards, several parties expressed concerns regarding the appropriateness of the early credits that were proposed by EPA, arguing that the credits are too "generous." In our view, the proposed early credits are essential to assure the feasibility of the proposed standards. Manufacturers' needs for such credits should be evaluated in the context of the historic nature of the proposed standards (in terms of the dramatic changes the standards will necessitate in vehicle design) and the economic environment in which manufacturers are being called upon to implement these changes. The early credits provide an essential safety valve for the transition to the aggressive new standards program. [OAR-2009-0472-7123.1, p.14]

Early fleet average credits under pathways 1, 2, and 3 are based on credits and debits earned in the California program. These provisions are necessary to counter CARB's proposal to require manufacturers with net debits in California at the end of the 2011 model year to use and retire federal credits to make up for the California debits. To the extent that California will require that debits be carried over from the California to the federal program, it is only fair that credits be carried over as well. AIAM has opposed California's claim to authority to cancel Federal credits. We urge NHTSA and EPA to support our concerns on that point. California has no direct regulatory authority over the Federal program, and AIAM therefore does not believe that CARB has the power to require a forfeiture of Federal credits. Moreover, in the 2012 model year and thereafter, a manufacturer will have the option under the California program of continuing to comply separately with the California program or transitioning fully to the federal program, in which case compliance with the federal program will be "deemed" to be compliance with the California program. Should a manufacturer transition to the federal program, the intent of the commitment letters signed by the parties to the national standards agreement is that it will no

longer have any compliance obligations with regard to California after that date. We urge NHTSA and EPA to address our concerns on this point. [OAR-2009-0472-7123.1, p.14]

Chrysler Group LLC (Chrysler)

Chrysler recommends that all of the proposed early fleet average greenhouse gas reduction 'pathways' be included in the final rule.

EPA notes that certain proposed pathways 'could be eliminated to simplify the program'. However, Chrysler disagrees that elimination of a potential early credit option would not diminish its overall flexibility. Given that EPA proposes to allow manufacturers to select the early fleet average pathway taken at the end of the 2011 model year, but proposes to disallow using multiple pathways for the 2009-2011 early credit program, it makes sense to provide the maximum number of options for evaluating potential credit scenarios. [NHTSA-2009-0059-0124, p.29]

For early fleet average greenhouse gas reduction credits based on California regulations (Pathways 1 and 2), the 2.0 g/mile adjustment to the California greenhouse gas standards is not appropriate if the measurement metric is carbon-related exhaust emissions.

EPA proposes four 'pathways' through which early fleet average greenhouse gas reductions can receive credit in the 2009-2011 model years. Two of these pathways (Pathway 1 and Pathway 2) are based on California greenhouse gas regulation standards. EPA proposes to set the baseline standards for these pathways by lowering the California standards by 2.0 g/mile. This adjustment is based on the premise that N_2O and CH_4 'are included in the California GHG standards, but not included in the credits program.' [NHTSA-2009-0059-0124, pp.29-30]

Although it is true that N_2O is not included in the carbon-related emission ('CREE') metric proposed by EPA, CREE does include CH_4 (as part of the total hydrocarbon ('THC' term) plus the addition of CO. It seems as though the 2 g/mi adjustment was made based on a belief that the metric, which would be compared to the standard, only would include the CO_2 term. Chrysler emission test data suggests that the THC and CO components of the CREE metric will add approximately 0.8 (on a small car) to 3.0 (on a large truck) g/mi combined city/highway. These values equate to a 1.7 g/mi contribution based on a 60/40 car/truck fleet mix. [NHTSA-2009-0059-0124, p.30]

Chrysler recommends that no adjustment to the California standards be made for evaluating the early fleet average greenhouse gas reduction by Pathways 1 and 2 if CREE is used as the metric. [NHTSA-2009-0059-0124, p.30]

Chrysler supports EPA's inclusion of air conditioning credits in the assessment of California and Clean Air Act Section 177 state fleet averages, and the availability of air conditioning credits outside of these states.

EPA's proposed methodology ensures that air conditioning credits are not double counted in states where a greenhouse gas regulation program is in affect for the 2009 through 2011 model

years while recognizing the surplus nature of greenhouse gas reductions which occur outside of these states. [NHTSA-2009-0059-0124, p.30]

Alliance of Automobile Manufacturers (Alliance)

The Alliance applauds the efforts of the EPA NPRM to provide as much flexibility as possible and we support the EPA's efforts to provide automakers with legitimate opportunities to bank early fleet average credit based on real greenhouse gas (GHG) reductions from products designed to meet current regulations. This proposed fleet average credit provides much needed flexibility to the regulations and provides manufacturers with additional lead time to implement some of the technologies that are needed in the later years of the proposal. Nonetheless, the proposed regulation is stringent: it would not allow banked early fleet average credit to last into the later years, nor would it provide easy windfall credit that would slow the implementation of new technology. Even with this flexibility, all automakers will be challenged to meet this proposed regulation. [OAR-2009-0472-6952.1, p.7]

The Alliance supports EPA's proposal in the NPRM to allow early fleet average CO_2 credit. 74 Fed. Reg. 49,536. The Alliance also supports EPA's proposal to provide flexibility by allowing automakers to use four different pathways to earn early fleet average credit. The EPA correctly observes that a wide range of automakers are currently selling vehicles in the U.S. market with different fleet mixes and sales volumes. The four pathways proposed provide reasonable options to such a diverse group of manufacturers. Also, the proposed early fleet average credit offers real-world CO_2 reductions, rewarding automakers for providing fleet performance that exceeds the California and Federal standards. [OAR-2009-0472-6952.1, p.7]

The credit and the pathways proposed by the EPA would not result in a "windfall." Regarding the credit proposed under the California programs (Pathways 1, 2 and 3), since EPA has granted the waiver request for California's GHG regulations, credits earned under these regulations are appropriate. California's GHG regulations have been approved by the state of California since 2004, and at least some automakers, anticipating possible waiver approval, prepared for the implementation of the California GHG regulations beginning as early as MY 2009. In addition, CARB appears to have anticipated that lead time was necessary to implement GHG reduction technologies and concluded that, considering needed lead time, the MY 2009 – 2011 standards are appropriately stringent. CARB anticipated the banking of credit during the early years of the California GHG regulations in anticipation of the stringent requirements in later model years. [OAR-2009-0472-6952.1, pp.7-8]

It is this new technology that allows manufacturers to earn the credit. Therefore, the credit does not provide a "windfall" that will prevent the implementation of new technologies, but rather it encourages and rewards such actions. [OAR-2009-0472-6952.1, p.8]

The EPA would also protect from excessive use of early credit with the five year carry forward restriction on such credit. This means the any credit earned in MY 2009, considered the best year for opportunity for auto manufacturers to earn credit, is not useful past MY 2013. This proposed additional safeguard would appropriately restrict the trading of early fleet average credit. [OAR-2009-0472-6952.1, p.8]

The early fleet average credit pathways are also appropriate to balance the traditional credit allowed under the NHTSA fuel economy regulations. The EPA GHG regulation and the NHTSA CAFE program should mirror each other as much as possible and the early credit fleet average program is an important component of that harmonization. [OAR-2009-0472-6952.1, p.8]

Volkswagen Group of America (Volkswagen)

Regarding the credit flexibilities in the NPRM relative to the EPA GHG proposed regulation, Volkswagen supports the credit flexibilities outlined by the EPA. In particular, Volkswagen supports the early fleet credit program that provides manufacturers with the ability to outperform the existing NHTSA and California GHG regulation in the 2009 through 2011 timeframe to earn credit during these years. This provides auto manufacturers with the flexibility needed to plan their product strategy and the introduction of GHG reduction technologies over the course of this regulation. Volkswagen supports the EPA proposal to provide four different early fleet credit pathways, as the EPA correctly recognizes that the auto companies have very diverse sales volumes and fleet mixes and that various pathways are necessary to provide flexibility to all automakers. [OAR-2009-0472-7210.1, pp.2-3]

In addition, providing early fleet credit flexibility is consistent with the type of carry forward/carry back provision allowed under the current NHTSA CAFE system. Manufacturers are currently allowed to bank and use CAFE credit and will fully implement this ability in the 2009 through 2011 period in anticipation of the new NHTSA regulation beginning on 2012 model year. In an effort to harmonize the EPA GHG and the NHTSA CAFE programs for 2012 - 2016 as much as possible, it is entirely appropriate for the EPA to utilize early fleet credits during the 2009 - 2011 time period. This will allow manufacturers to utilize a similar fleet approach to both regulations. We do not believe early fleet credit results in windfall credit, as manufacturers have planned and prepared for compliance in the 2009 -2011 time period and deserve credit if they can exceed the applicable standards for that time window. [OAR-2009-0472-7210.1, p.3]

Toyota Motor North America

Toyota supports EPA's proposal to provide credits for achieving early GHG emission reductions by over complying with the existing NHTSA CAFE standards or GHG standards adopted by the State of California (and subsequently adopted by numerous other states) during 2009 through 2011 model years. To the extent that over compliance with these programs - and thus the emission benefits - are real, the overall objectives of EPA's program can be achieved while providing manufacturers with needed flexibility to deploy technology in a manner consistent with product cycles, market uncertainties, and other factors. Further, EPA has routinely provided early credit opportunities when adopting its regulations, including situations in which California regulations have preceded EPA's regulations, as is the case with the subject proposal. [OAR-2009-0472-7291, p.19]

Public Citizen and Safe Climate Campaign

EPA Response to Comments

EPA proposes four opportunities for automakers to bank early windfall greenhouse gas emission credits for model years 2009-2011: (1) averaging credits, (2) air conditioning credits, (3) advanced technology vehicle credits, and (4) off-cycle credits. The averaging credits are divided into four pathways from which EPA proposes manufacturers may choose a pathway for earning early credits. Manufacturers must choose one pathway only, but they can wait until 2011 to choose it. [OAR-2009-0472-7050.1, p.4]

The four pathways for averaging credits are based on over-compliance for fleets of vehicles either (1) nationwide, (2) in California and the other states which have adopted California's standards under Section 177 of the CAA ("177 states"), (3) states outside California and the 177 states, or (4) to forego all California-based credits and earn CAFE credits in states outside California and the 177 states. Pathways 1 and 2 allow manufacturers to earn credits for over-compliance with the California standards either nationwide or in California and the 177 states. Pathways 3 and 4 would allow manufacturers to apply credits for over-compliance with CAFE standards in states outside California and the 177 states. Early credits would be permitted to be traded and transferred without limitation. The only limitations on early credits are automakers would have to clear any deficit for model years 2009-2011 before it could apply credits to model year 2012 and beyond, and credits would be subject to the five-year carry-forward limit. [OAR-2009-0472-7050.1, p.4]

We object to granting any credits for exceeding standards in California and the 177 states in 2009-2011. Manufacturers exceeding these requirements need not be rewarded in the National Program, which does not take effect until 2012. We recommend that if EPA grants any early action credits that it [OAR-2009-0472-7050.1, p.4] use a hybrid of Pathways 2 and 3, where manufacturers would earn credits for exceeding compliance with the California baseline, but only for the fleet of vehicles sold outside California and the 177 states. [OAR-2009-0472-7050.1, p.5]

No CAFE-based credits should be granted for model years before 2011. The EISA clearly prohibits the trading and transfer of credits earned in these model years, and we believe this could function as a backdoor means by which automakers could trade credits that would otherwise be nontransferable. If CAFE-based credits are granted for any of the alternatives, we urge that EPA bar these credits from transfer or trading. [OAR-2009-0472-7050.1, p.5]

Union of Concerned Scientists

EPA proposes an opportunity for manufacturers to accrue "early credits" in model years 2009-2011 by over-compliance with a baseline standard. According to EPA, [OAR-2009-0472-7181.1, p.10]

The baseline standard would be set to be equivalent, on a national level, to the California standards. Potentially, credits could be generated by over-compliance with this baseline in one of two ways – over-compliance by the fleet of vehicles sold in California and the CAA section 177 states (i.e., those states adopting the California program), or over-compliance with the fleet of vehicles sold in the 50 states. EPA is also proposing early credits based on over-compliance with

CAFE, but only for vehicles sold in states outside of California and the CAA section 177 states. [OAR-2009-0472-7181.1, p.10]

UCS is concerned that the approach as stated will erode the rule's energy and emissions benefits because the credits offered will not reflect real, surplus emissions. In order to ensure that the credits accrued are based on actual emissions reductions, it is essential that the baseline for each model year not be defined as equivalent to the California standards, but rather as the more stringent of CAFE or the California standard. Because model years 2009 and 2010 will see California standards less stringent than CAFE standards, the rule as proposed would supply manufacturers with credits simply for complying with the law. Further, it also appears that based on the proposed rule, manufacturers may be able to acquire credits simply by shuffling cleaner vehicles into California or CAA Section 177 states. While we are generally supportive of flexibility mechanisms, we recommend that the agency modify its proposal to close these early credit loopholes. [OAR-2009-0472-7181.1, p.10]

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.103-113]

Third, early credits for overcompliance must reflect real surplus emissions. EPA proposes an opportunity for manufacturers to accrue early credits in model years 2009 through 2011 by overcompliance with a given baseline standard.

However, since CAFE is actually more stringent than California standards in 2009 and 2010, automakers merely minimally complying with federal fuel economy standards can accumulate credits, extra credits, for emission standards.

To ensure that the credits accrued are based on actual surplus, surplus emissions reductions, it is essential that the baseline for each model year not be defined as merely equivalent to California standards for those early years but, rather, as the more stringent -- in any given year, the more stringent of CAFE or the California standard for that year.

Further, it also appears that, based on the proposed rule, manufacturers may be able to acquire credits simply by shuffling cleaner vehicles into California or other Section 177 states.

Natural Resources Defense Council

Early Credits Should Only Be Awarded for Real and Surplus Emissions Reductions, Eliminating Windfalls that Undermine Pollution and Oil Savings Benefits
NRDC concurs with EPA's overall objective to ensure that early credit programs result in "real-world" emission reductions that are "actual" and "surplus." Unfortunately, it is clear that Pathways 1 and 2 do not meet the intent of the Agency. The reason is that in model year 2009 (and likely model year 2010) the CAFE standards result in a lower emission rate than the California program's GHG standards. As shown in the Table 1 below [See OAR-2009-0472-7141.1, p. 12 for Table 1], the design of Pathways 1 and 2 allow automakers to accrue credits simply by complying with the CAFE program. [OAR-2009-0472-7141.1, p. 12]

To eliminate this "windfall" credit opportunity, NRDC recommends that the national baseline for MY 2009 (and possibly MY 2010) be set at the GHG level which results from complying with the applicable national standards, which for that year are the CAFE standards. EPA proposes to prohibit the trading of early credits from MY 2009 between firms, to exclude FFV credits from the early credit program and to allow early credits to remain eligible for carry-forward for no more than five years. These limitations mitigate the problem, but they do not fully eliminate windfall credit generation. [OAR-2009-0472-7141.1, p. 13]

[[NRDC also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 23-24.]]

Sierra Club

We object to proposed early action credits. These credits for vehicles sold between model years 2009-2011 will be awarded to vehicles that were designed prior to the proposed standards. If early credits are to be allowed, automakers should be required to declare which pathway they will use before accruing credits, not at the end of 2011. Further, early credits should be based on the most stringent standard that applies. In several years, California's Pavley standards are lower than federal CAFE standards, thereby giving automakers the opportunity to receive windfall credits simply by opting to comply with a weaker standard. [OAR-2009-0472-7278.1, p.15]

[[Sierra Club also submitted these comments as testimony at the Detroit public hearing, See docket number OAR-2009-0472-6185, pp. 29-30]

California Air Resources Board

CARB does not support the proposed provisions for early credits prior to implementation of the national GHG program unless such credits are accrued by exceeding California's requirements in California and those states that have adopted California's program. Of the four pathways proposed, Pathway 2 more closely matches this criterion. Nonetheless, should EPA chose to retain all four pathways in the final rule, we strongly support incorporating in the final rule the provisions proposed by EPA to prohibit trading between manufacturers of credits earned in model year 2009, require the use of credits earned in 2009 to offset debits accrued in 2010-2011, and prohibit trading between manufacturers of credits earned in model year 2009. These are reasonable proposals designed to assure that credits earned in the early years do not provide a windfall for vehicle manufacturers and that the emission reductions envisioned for the national GHG program are realized. [OAR-2009-0472-7189.1, p.3]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

National Automobile Dealers Association (NADA)

EPA should mirror the CAFE program's time-honored early fleet average credits as they are essential to compliance with the National Program's ambitious targets. As proposed, the early fleet average credit scheme is too complex. especially given that CARB's 2004 standards need

not be considered and, in any event, in no way trump the MY 2009-2011 CAFE standards. [OAR-2009-0472-7182.1, p.7]

State of New Jersey

The Department supports the USEPA's real-world reductions approach for alternative fuel vehicles, as well as its efforts to prevent unrealistic excess credits from trucks, risking a delay of the introduction of advanced vehicle technologies across the industry from the 2012 and later USEPA greenhouse gas emission standards. However, we suggest that in addition the Agencies limit the fraction of credits from trucks and only allow trading of credits among same vehicle categories. These additional precautions will ensure that the credits from trucks cannot be used to normalize the debits from passenger cars, or diminish the value of the credits from trucks that can be carry-forward.

The Department supports the prohibition of trading proposed model year 2009 generated early credits between firms under the proposed Pathways 1, 2 or 3 due to the anomalous nature of model year 2009. If trading were allowed for the 2009 model year, there is a potential for the generation and trading of a large amount of credits which are in fact not excess.

The Department seeks clarification from the USEPA on how the proposed credit Pathways would interface with California's and the section 177 states' (including New Jersey's) enforcement of the California greenhouse gas standards during the 2009 to 2011 model years.

Finally, the Department prefers limiting the Early Fleet Average CO_2 credits to Path 1 (California-based Credits for National Fleet) and Path 2 (California-based Credits sold in California plus CAA 177 States) and opposes the addition of Pathways 3 and 4. Pathways 3 and 4 could result in the generation of CAFE credits which are in fact not excess credits. [OAR-2009-0472-7109.1, p.8]

New York State Department of Environmental Conservation

EPA proposes to allow early credits to be generated for the 2009-2011 model years, and notes that some manufacturers will likely generate large numbers of 2009 model year credits. To minimize the potential 'windfall' for manufacturers, we suggest that the 5 model year lifespan of these early credits should start immediately, even though there will be no deficits to offset until at least the 2012 model year. Thus 2009 model year credits would expire at the end of the 2014 model year. [OAR-2009-0472-7454, p.2]

Mass Comment Campaign (2,332) (unknown organization)

Likewise, manufacturers must not be permitted to rack up windfall credits for exceeding the standard in advance of the 2011 model year. For passenger cars the existing standard has been in effect since 1985, and for light trucks, it has been only nominally increased in the past 20 years. Any credits earned for early compliance must not be available for trading among manufacturers. [OAR-2009-0472-5747, p.1]

South Coast Air Quality Management District

First, early credits under the federal program for 2012 to 2016 vehicles may be used in such a way as to possibly reduce the stringency of the ARB program. This would be a negative unintended consequence which should be avoided wherever possible.

EPA should consider establishing a cap on the number of early credits to ensure that California's greenhouse gas standards are not undermined. At a minimum, the South Coast MD staff recommend that there be a full public accounting of these early compliance earned and traded credits to ensure the greatest transparency in public disclosure.

Such disclosure may itself serve as a constraint on excessive credit reliance given the possible negative publicity associated with compliance via imported credit use.

[Comments are from LA Testimony, OAR-2009-0472-7283, pp.59-67.]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, p. 68.]]

Environment Michigan

Specifically, we're concerned that the proposed standards allow automakers to rack up credits for new vehicles sold from 2009-2011 that exceed existing standards. These are vehicles that had been planned years before these new standards were announced. Automakers should not be given windfall credits for cars that were already in the pipeline.

Chew, Yuli

I support this EPA's position in preventing unreal excess credits from trucks and prohibiting the trading of model year 2009 generated early credits between firms, risking a delay of additional technology across the industry from 2012 and later EPA CO_2 standards. I would like to suggest that trading be limited to credits among same vehicle categories, not using credits from trucks to equalize the debits from the cars. [OAR-2009-0472-7042.1, p.4]

For the four fleet average-based CO_2 early credit pathways EPA is proposing, I would welcome just limit the Early Fleet Average CO_2 credits to Path 1(California-based Credits for National Fleet) & Path 2 (California-based Credits sold in California plus CAA 177 States). CAFE-based credits shouldn't be added to these Greenhouse Gas credits. The credits from trucks should be limited for use to equalize the debits from trucks only. [OAR-2009-0472-7042.1, p.4]

Seal, Kathy

Second of all, please minimize the credits that automakers are allowed to receive for vehicles that were sold before new standards take effect in 2012. Please don't give them these windfall credits that have been talked about.

EPA Response:

EPA received comments from manufacturers in support of the proposed early credits program as a necessary compliance flexibility. The Alliance commented that the early credits reward manufacturers for providing fleet performance that exceeds California and Federal standards and do not result in a windfall since manufacturers have added new technology in anticipation of the grant of California's waiver request and in reliance on the credit generating and banking provisions available under the California program. AIAM commented that early credits are essential to assure the feasibility of the proposed standards and the need for such credits must be evaluated in the context of the dramatic changes the standards will necessitate in vehicle design and the current economic environment in which manufacturers are called upon to make the changes. Manufacturers also supported retaining all four of the proposed pathways, commenting that eliminating pathways would diminish the flexibility of the program.

EPA also received comments from many environmental organizations and states that the program would provide manufacturers with windfall credits because manufacturers will not have to take any steps to earn credits beyond those that are already planned and in some cases implemented. These commenters were particularly concerned that the California truck standards in MY 2009 are not as stringent as MY 2009 CAFE, so overcompliance with the California standards will automatically result in a windfall in MY 2009, and possibly even MY2010 (the truck standard in California is less stringent than that of CAFE in MY2010, but the California passenger car standard is more stringent than that of CAFE). These commenters supported an early credits program based on overcompliance with the more stringent of either the CAFE or California standards in any given year. CARB commented: "should EPA choose to retain all four pathways in the final rule, we strongly support incorporating in the final rule the provisions proposed by EPA to prohibit trading between manufacturers of credits earned in model year 2009, require the use of credits earned in 2009 to offset debits accrued in 2010-2011, and prohibit trading between manufacturers of credits earned in model year 2009. These are reasonable proposals designed to assure that credits earned in the early years do not provide a windfall for vehicle manufacturers and that the emission reductions envisioned for the national GHG program are realized."

EPA is retaining the early credits program because EPA judges that they are not windfall credits, and (as documented in the comments above) manufacturers in some cases have reasonably relied on the availability of these credits, and have based early model year compliance strategies on their availability so that the credits are needed to provide adequate lead time for the initial years of the program. See, e.g. Comments of the Alliance. The same reasoning holds for authorizing early credits for exceeding CAFE standards in non-California states. However, as discussed below, EPA is restricting credit trading for MY2009 credits earned under the California-based pathways. Also, under the California-based Pathways 1 and 2, EPA is requiring manufacturers to cover any deficits incurred against the baseline levels established by EPA during the three year period 2009-2011 before credits can be carried forward into the 2012 model year. For example, a deficit in 2011 would have to be subtracted from the sum of credits earned in 2009 and 2010 before any credits could be applied to 2012 (or later) model year fleets. EPA is including this provision to help ensure that the early credits generated under this program are consistent with the credits available under the California program during these model years. In

its comments, CARB supported these restrictions as a way to prevent credits from being unearned windfalls, and EPA agrees with this comment.

Credit Restrictions

EPA received comments that the proposed approach under the California-based pathways will provide windfall credits to manufacturers because the MY2009 California light truck standards are less stringent than the corresponding CAFE standards, so that credits are necessarily generated for merely complying with the MY 2009 CAFE standard, which manufacturers will likely do in any case.. Although these credits could be considered windfalls if looked at for this one isolated model year, they are not when the program is viewed in proper perspective. Credits are not based solely on performance in MY 2009. They are based on performance over a three model year period, MYs 2009-2011. As noted in the proposal, EPA expects that the requirement to over comply over the entire three model years should mean that the credits that are generated are real and are in excess of what would have otherwise occurred. However, because of the circumstances involving the 2009 model year, in particular for companies with significant truck sales, there is some concern that under Pathways 1, 2, and 3, there is a potential for a large number of credits generated in 2009 against the California standard, in particular for a number of companies who have significantly over-achieved on CAFE in recent model years. Some commenters were very concerned about this issue and commented in support of restricting intercompany trading of MY2009 credits under the California-based pathways as a means of properly cabining generation and utilization of these credits. EPA requested comments on this approach and is finalizing this credit trading restriction based on continued concerns regarding the issue of windfall credits for MY 2009 under the California-based program. EPA wants to avoid a situation where, contrary to expectation, some part of the early credits generated by a manufacturer are in fact not excess, where companies could trade such credits to other manufacturers, risking a delay in the addition of new technology across the industry from the 2012 and later EPA CO_2 standards. Therefore, manufacturers selecting Pathways 1, 2, or 3 will not be allowed to trade any MY 2009 credits that they may generate. See section 86.1867-12 (a) (1) (vi), (a) (2) (ii), and (a) (2) (vii).

UCS commented that it appears that based on the proposed rule, manufacturers may be able to acquire credits simply by shuffling cleaner vehicles into California or CAA Section 177 states. In response, EPA does not believe there will be a strong incentive for manufacturers to shuffle cleaner vehicles into California and 177 states due to the early credits program. EPA is adopting credit trading restrictions for MY 2009 California-based credits and requiring manufacturers to use the same pathway over the three-year period and make up deficits during any of those three years, as discussed above. These provisions would deter manufacturers from using this strategy in MY2009 when the California standard is less stringent than CAFE. Manufacturers have the option of earning early credits for its cleaner vehicles both inside and outside of California and 177 states, so there would not be much incentive to shuffle cleaner vehicles. Also, significantly shuffling vehicles would present challenges for the manufacturer that would likely outweigh any possible marginal benefit.

EPA received a variety of additional comment regarding early credit restrictions. Public Citizen and Safe Climate Campaign commented "No CAFE-based credits should be granted for model years before 2011. The EISA clearly prohibits the trading and transfer of credits earned in these model years, and we believe this could function as a backdoor means by which automakers could trade credits that would otherwise be nontransferable. If CAFE-based credits are granted for any of the alternatives, we urge that EPA bar these credits from transfer or trading." The State of New Jersey and others commented that EPA should restrict the transfer of early credits between vehicle classes, and were especially concerned about truck credits being used for passenger cars. SCAQMD commented that EPA should consider establishing a cap on the number of early credits to ensure that California's greenhouse gas standards are not undermined. In response, EPA is not finalizing restrictions on transferring or trading credits beyond the restrictions discussed above for MY2009 credits under the California-based pathways. EPA understands that EISA does not allow credit transfers or trading until MY2011. However, EPA does not believe that the early credits are windfall credits because they are based on manufacturers achieving emissions reductions beyond those required. Therefore, EPA does not believe additional credit restrictions limiting how manufacturers use the credits are appropriate in implementing the independent authority of section 202 (a)(1). EPA does not believe the program will result in a "backdoor" way for manufacturers to transfer or trade credits in a manner forbidden under EISA since the EISA restrictions remain in place for CAFE. Also, because EPA does not believe that the early credits are windfall credits, EPA is not placing a cap on the amount of early credits a manufacturer may generate. The early credits are an important part of the flexibility provided to manufacturers to transition to the new standards and hence a proper means of providing needed lead time to meet the new standards.

New York State Department of Environmental Conservation commented that the 5-year credit life should start in the year the credits are generated. For example, 2009 model year credits would expire at the end of the 2014 model year. The Alliance also commented on this topic, noting that EPA would protect from excessive use of early credit with the proposed five year carry forward restriction on early credit. (Note that the Alliance commented that MY2009 credits would not be useful after MY2013. However, credits may be carried forward for five years after the model year in which they are earned and therefore MY2009 credits would be able to be used in MY2014, after which they would expire.) The recommendation is consistent with EPA's proposed program and EPA is adopting this approach for the credit life of early credits in the final rule. (See §86.1867-12(a).) Additional comments regarding credit carry-forward are addressed in Section 5.3.

Early Credit Pathways

The Alliance, AIAM, and several manufacturers commented in support of retaining the four Early Credits Pathways in order for manufacturers to retain the flexibility provides by the four different pathway choices.

Public Citizen and Safe Climate Campaign commented "We object to granting any credits for exceeding standards in California and the 177 states in 2009-2011. Manufacturers exceeding these requirements need not be rewarded in the National Program, which does not take effect until 2012. We recommend that if EPA grants any early action credits that it use a hybrid of

Pathways 2 and 3, where manufacturers would earn credits for exceeding compliance with the California baseline, but only for the fleet of vehicles sold outside California and the 177 states." In response, the rationale for the comment is unclear. EPA does not agree that California-based credits should only be allowed outside of California and the section177 states. Manufacturers that achieve emissions reductions beyond those required by the California standards should be eligible for credits in California and the section 177 states. EPA is requiring manufacturers to offset any credit deficits in any of the MYs 2009-2011 in order to carry California-based credits forward into the 2012 and later model years. Also, these credits will not be double-counted with California credits since California is not implementing their standards for 2012 and later model years.

CARB commented that it does not support the proposed provisions for early credits prior to implementation of the national GHG program unless such credits are accrued by exceeding California's requirements in California and those states that have adopted California's program. Of the four pathways proposed, Pathway 2 more closely matches this criterion, in their view. The State of New Jersey and others provided similar comments. In response, EPA is retaining all of the proposed credit pathways, including early credits based on the CAFE standards for vehicles sold outside of the California and the section 177 states. EPA is restricting the trading of MY 2009 credits earned under the California-based pathways and also requiring manufacturers to offset all deficits accrued against the California-based program baseline for MYs 2009-2011. CARB commented in support of these provisions as a way to address windfall credits issues.

Sierra Club commented that if early credits are to be allowed, automakers should be required to declare which pathway they will use before accruing credits, not at the end of MY 2011. The reasoning for the comment is unclear and EPA does not believe that this type of early election is necessary. EPA notes that it is requiring manufacturers to use the same pathway for the entirety of the early credits program, and therefore manufacturers cannot switch back-and-forth among options from year-to-year in order to maximize credits. Proper accounting of early credits is required at the end of the early credits program, and EPA must approve the early credits report documenting that accounting.. See section 86.1867-12 (e), (a).

NADA commented that the early credits proposal was too complex and that EPA should allow credits based on CAFE standards nationwide. In response, the proposed approach of four credit pathways was supported by manufacturers and EPA does not believe the provisions will be too complex. EPA is not providing an option for CAFE-based credits nationwide because the California program is in effect for MYs 2009-2011 and EPA believes it is appropriate to base early credits on achieving GHG emissions reductions beyond those required by California and the section 177 states.

Transparency

EPA received comments that there be a full public accounting of early compliance earned and traded credits to ensure the greatest transparency in public disclosure. EPA plans to make this type of information available to the public. Please see Section 5.10.1 for EPA's full response to comments regarding data transparency and availability. See also section 86-1867-12 (e) setting

forth the reporting requirements for early credit reporting. Such reports, among other things, must document both the manufacturer's elected pathway but provide detailed documentation of credit calculation for each averaging set (i.e. vehicle type) for which credits are claimed to be generated.

Baseline for California-based Pathways

In establishing the baselines for California-based credits pathways, EPA proposed to adjust the California standards by 2.0 g/mile to account for the exclusion of N_2O and CH_4, which are included in the California GHG standards, but not included in the federal GHG credits program. Chrysler commented that "Although it is true that N20 is not included in the carbon-related emission ('CREE') metric proposed by EPA, CREE does include CH_4 (as part of the total hydrocarbon ('THC' term) plus the addition of CO. It seems as though the 2 g/mi adjustment was made based on a belief that the metric, which would be compared to the standard, only would include the CO_2 term. Chrysler emission test data suggests that the THC and CO components of the CREE metric will add approximately 0.8 (on a small car) to 3.0 (on a large truck) g/mi combined city/highway. These values equate to a 1.7 g/mi contribution based on a 60/40 car/truck fleet mix." Chrysler recommended that no adjustment to the California standards be made for evaluating the early fleet average greenhouse gas reduction by Pathways 1 and 2 if CREE is used as the metric.

In response, the commenter is correct, and therefore the final levels shown in the table below are 2.0 g/mile higher than proposed. EPA is adopting the CREE metric which already accounts for CH_4, and EPA agrees that the THC and CO components of CREE offset the 2.0 g/mile EPA proposed to add to the California standards.

California Equivalent Baselines CO_2 Emissions Levels for Early Credit Generation

Model Year	Passenger Cars and Light Trucks with an LVW of 0-3,750 lbs	Light Trucks with a LVW of 3,751 or more and a GVWR of up to 8,500 lbs plus Medium-duty Passenger Vehicles
2009	323	439
2010	301	420

California Program Debits

AIAM commented "AIAM has opposed California's claim to authority to cancel Federal credits. We urge NHTSA and EPA to support our concerns on that point. California has no direct regulatory authority over the Federal program, and AIAM therefore does not believe that CARB has the power to require a forfeiture of Federal credits. Moreover, in the 2012 model year and thereafter, a manufacturer will have the option under the California program of continuing to comply separately with the California program or transitioning fully to the federal program, in which case compliance with the federal program will be "deemed" to be compliance with the California program. Should a manufacturer transition to the federal program, the intent of the commitment letters signed by the parties to the national standards agreement is that it will no longer have any compliance obligations with regard to California after that date. We urge NHTSA and EPA to address our concerns on this point."

In response, the EPA and CARB programs will operate independently of one another. If a manufacturer has a deficit in California and has the option under the California program of offsetting that deficit with EPA surplus credits, the manufacturer would have the option of notifying EPA to remove a number of credits as determined by the manufacturer from their EPA credits bank. EPA would then confirm that the credits have been removed. This would be the extent of EPA's involvement. There are no requirements in EPA's regulations to compel and manufacturer to use their EPA credits to offset a deficit in California. However, EPA does not believe it should prevent a manufacturer from opting to use their surplus EPA credits in this way, if that is a provision of the California program.

Enforcement

The State of New Jersey commented that "The Department seeks clarification from the USEPA on how the proposed credit Pathways would interface with California's and the section 177 states' (including New Jersey's) enforcement of the California greenhouse gas standards during the 2009 to 2011 model years." EPA is adopting early credits provisions that, although based on the standards adopted by California, are completely independent of the California program from an implementation standpoint. In other words, EPA has established the baseline against which credits will be earned based on the California standards. However, EPA will implement its early credits program independently according to EPA final regulations.

Organization: Hyundai Motor Company
Kia Motors

Comment:

Hyundai Motor Company

Hyundai supports that EPA will allow manufacturers to obtain credits for MY 2009 through 2011 based on over-compliance with applicable California GHG and/or NHTSA CAFE regulations.

Moreover, we believe that the calculation of early credits for over-compliance with the GHG standards should reflect the standards to which each manufacturer was actually subject during MY 2009 through 2011. For instance, companies that were exempt from California regulations should not be subject to the California baseline standard when calculating early credits from California and Clean Air Act Section 177 states. More specifically, we request that EPA add an additional early credit option based on over-compliance with CAFE standards in 50-states for manufacturers that were classified as IVM under the California regulations. On principle, manufacturers should receive credits for exceeding applicable requirements. [OAR-2009-0472-7231.1, p.4]

Kia Motors

[These comments were submitted as testimony at the Los Angeles public hearing. See docket number EPA-HQ-OAR-2009-0472-7283, p.172]

However, we do believe that early credit generation should be based on the standards to which each manufacturer was subject under the California regulations. An additional early credit option based on overcompliance with CAFE standards in 50 states should be considered.

EPA Response:

EPA understands that some manufacturers are not subject to the California standards in MYs 2009-2011. This does not mean that it is appropriate for such manufacturers to earn credits against some other baseline. EPA continues to believe that the California baseline remains the most appropriate to use as a measure for generating early credits. Most obviously, it is the only GHG standard available for comparison, and also, as discussed in section III.D.1 of the preamble to the final rule, a good starting measure for evaluating technical feasibility of light duty vehicle GHG control capability. There are no other standards that meet these criteria. Indeed, earning credits against standards less rigorous than California's would raise legitimate concerns about windfall credits since credits could be earned for non-optimized performance. Thus, EPA is retaining the four early credits pathways as proposed and is not adding a fifth pathway for 50-state CAFE-based credits. A manufacturer not being subject to the California standards of course does not prevent it from earning early credits using the California-based pathways. Such manufacturers may still earn early credits under the California-based pathways if they are able to demonstrate emissions reductions per the requirements of the early credits program – i.e. overcomplying with the levels established by those standards.

5.7.5.2. Other Early Credits

Organization: Alliance of Automobile Manufacturers (Alliance)
Hyundai Motor Company

Comment:

Alliance of Automobile Manufacturers (Alliance)

The EPA's proposed implementation of the early fleet average credit is also appropriate. Regarding early A/C credit, the Alliance agrees with the proposal to measure early A/C credit per the procedures outlined in Section III.C.5.b. Applying any additional early credit such as FFV credit and applying vehicle definitions per the existing California regulations is practical for the proposed California pathways and also ensures that there are not windfall credits. [OAR-2009-0472-6952.1, p.8]

Hyundai Motor Company

We also support EPA's early credits for air conditioner system improvements, advanced technology and off-cycle technology. We believe these credits provide program flexibility and optimize cost effectiveness, as well as rewarding early adopters. [OAR-2009-0472-7231.1, p.4]

EPA Response:

EPA is promulgating early credits options for A/C credits as proposed. With regard to FFVs, as proposed, EPA is also allowing manufacturers to include alternative compliance credits earned per the California alternative compliance program. These alternative compliance credits are based on the demonstrated use of alternative fuels in flex fuel vehicles. As with the California program, the credits are available beginning in MY 2010. Therefore, these early alternative compliance credits are available under EPA's program for the 2010 and 2011 model years. FFVs are otherwise included in the early credit fleet average based on their emissions on the conventional fuel. EPA will also use the California vehicle definitions for the California-based pathways as proposed.

EPA is finalizing early incentives for advanced technology vehicles with the changes described in Section 5.7.3. Manufacturers may use the 0 g/mile value for vehicles sold in MY2009-2011 consistent with the approach being finalized for MY 2012-2016. Any vehicles sold prior to MY 2012 under these provisions must be counted against the cumulative sales cap of 200,000 (or 300,000, if applicable) vehicles.

5.8 Feasibility of the CO_2 Standards

5.8.1. EPA Reference Vehicle Fleet for Evaluating Further CO2 Reductions

Organization: Environmental Defense Fund

Comment:

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.72-79]

Fleet mix assumptions. The reductions to be realized by these proposed standards are highly dependent on assumptions about fleet composition in model years 2012 through 2016. We urge federal policy makers to find smart ways to ensure the assumptions about fleet mix reflect the fleet composition in the real world.

EPA Response:

The commenter is correct that predictions of future fleet composition are of critical importance in establishing the standards, and EPA's projections are based on the best information and methodology of which it is aware. As set out in detail in section II.B of the preamble to the final rule, and chapter one of the joint TSD, EPA (and NHTSA) based the projection of total car and total light truck sales for MYs 2011-2016 on projections made by the Department of Energy's Energy Information Administration (EIA). EIA publishes a mid-term projection of national energy use called the Annual Energy Outlook (AEO), specifically the AEO 2010 Early Release. To further account for changes between car and truck designs, EPA purchased (and shared with NHTSA) forecasts from two well-known industry analysts, CSM Worldwide (CSM), and J.D. Powers. Determining which traditionally-defined trucks will be defined as cars for purposes of this final rule using the revised definition established by NHTSA for MYs 2011 and beyond

requires more detailed information about each vehicle model. This is described in greater detail in Chapter 1 of the joint TSD. The forecasts obtained from CSM provided estimates of car and truck sales by segment and by manufacturer, but not by manufacturer for each market segment. Therefore, NHTSA and EPA needed other information on which to base these more detailed projected market splits. For this task, the agencies used as a starting point each manufacturer's sales by market segment from model year 2008, which is the baseline fleet. Because of the larger number of segments in the truck market, the agencies used slightly different methodologies for cars and trucks, as described in section II.B.3 of the preamble to the final rule and chapter 1 of the joint TSD.

EPA notes further that the use of publically available information to project reference fleets is a far more transparent process than used in previous fuel economy rulemakings, and allows the public to fully participate and evaluate the agencies' projections. Most commenter's agreed.

5.8.2. Effectiveness and Costs of CO2-reducing Technologies

Organization: Environmental Defense Fund

Comment:

III. THE PROPOSED STANDARDS CAN BE ACHIEVED THROUGH COST EFFECTIVE, AVAILABLE TECHNOLOGIES THAT WILL PRESERVE CONSUMER CHOICE AND SAVE CONSUMERS MONEY.

Light-duty vehicle manufacturers can achieve the proposed standards through a variety of cost effective and readily-available technologies. EPA's staff produced a report for the National Research Council identifying over two dozen technologies in production or impending that can be deployed to cut greenhouse gases and improve fuel economy. These include, among others, technological innovations in engine manufacture like engine friction reduction and cylinder deactivation, transmission advances, hybrid drive train utilization, mitigation of air conditioning emissions, aerodynamic improvements, and low-rolling resistance tires. Individually, each one of these technologies can reduce CO2 emissions by as much as 15 percent from a baseline vehicle's emissions. EPA's staff concluded that the synergistic impacts of including multiple GHG reduction technologies in a single vehicle are often less than the sum total of each technology's individual impact. [OAR-2009-0472-7285.1, pp. 17-18]

The attached table [See OAR-2009-0472-7285.1, p. 18-22 for the Summary Table] summarizes some of these available technologies. Source: EPA Staff Technical Report: Cost and Effectiveness Estimates of Technologies Used to Reduce Light-duty Vehicle Carbon Dioxide Emissions, EPA420-R-08-008, March 2008 "EPA technical staff concludes there are a large number of technologies which can be applied to cars and trucks that are capable of achieving significant reductions in greenhouse gas emissions, and improve vehicle fuel economy, at reasonable costs." ES -1. [OAR-2009-0472-7285.1, p. 18]

Incremental costs are negligible for many technologies like low-friction lubricants and still modest for more comprehensive technologies like hybrid drive trains. Furthermore, EPA predicts many technology cost will benefit from the learning curve phenomenon, a decrease in unit cost as cumulative production increases. On average, EPA and NHTSA estimate that these new technologies will increase the cost of model year 2016 vehicle by less than 1,100 dollars but, as a result of fuel savings, the average consumer will save 3,000 dollars over the life of the vehicle. Moreover, consumers who finance their new-car purchase with a loan will save $12– $14 per month throughout the duration of the loan. These statistics underscore EPA technical staffs' conclusion that "there a large number of technologies which can be applied to cars and trucks that are capable of achieving significant reductions in greenhouse gas emissions, and improve vehicle fuel economy, at reasonable costs." [OAR-2009-0472-7285.1, pp. 22-23]

Manufacturers can also incorporate new, light-weight materials into vehicle design as a means of producing more fuel-efficient, safe vehicles. The proposed rule also contains compliance flexibilities like fleet averaging and other measures to provide cost savings, broad consumer choice and flexibility in meeting compliance obligations. As examined below, compliance flexibilities must be rigorous and well-designed to achieve light-duty emissions requirements. [OAR-2009-0472-7285.1, p. 23]

V. THE TIME TESTED HISTORY OF THE NATION'S CLEAN AIR LAWS SHOWS THAT EPA CAN DRAMATICALLY AND COST-EFFECTIVELY REDUCE EMISSIONS FROM MOTOR VEHICLES TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT. The EPA has a long history of successfully securing protective, cost-effective emission reductions from the nation's passenger vehicles, often confronted with claims from the regulated community that the mandated reductions were impracticable. As documented in the table below [See OAR-2009-0472-7285.1, p. 26 for the table.], EPA achieved substantial nationwide reductions in lead, carbon monoxide, and nitrogen oxides while vehicle miles traveled has risen substantially. [OAR-2009-0472-7285.1, p. 25]

Some will invariably make similar claims that reductions in heat-trapping greenhouse gas emissions are beyond the nation's reach. But the time tested history of Clean Air Act regulation and American innovation suggests that these claims are likewise misplaced. [OAR-2009-0472-7285.1, p. 25]

EPA Response:

EPA appreciates these comments, which generally affirm our estimates made in support of the NPRM. EPA has continued to evaluate both the cost and effectiveness of the technologies available to reduce GHG emissions and has updated several of these estimates. The reader is referred to Chapter 3 of the Joint TSD for these updated estimates.

5.8.3. Technology "Packages" and their Cost and Effectiveness

Organization: Shaw, Donald F.

Comment:

The auto industry does not presently have the technology to achieve these fuel standards with vehicles that meet the needs of the American public. Why punish the citizens with such requirements before the technology is ready especially considering the small claimed benefits. Let's give the techno logy more time to develop. Large families will need to drive two cars to get to participate in family activities including vacations. Where is the benefit? [OAR-2009-0472-7270.1, p. 1]

EPA Response:

The technologies which NHTSA and EPA project are available for manufacturers to apply in the MY 2012-16 timeframe are described in detail in Chapter 3 of the Joint TSD. Essentially every technology included in our projections of technical feasibility are already being used commercially somewhere in the world on light-duty vehicles. As explained in section III.D of the preamble to the final rule, the expanded use of these technologies is primarily a function of lead time needed to develop vehicle designs which incorporate these technologies. It is also a function of manufacturers' ability to modify or build production facilities to produce the components required by these technologies and the cost of doing so.

EPA and NHTSA have developed their projections of the cost and effectiveness of these technologies so that vehicle utility is not affected. This means that the agencies accounted for the costs of preserving vehicle utility in their cost estimates. In addition, the baseline vehicle fleet which EPA and NHTSA use to project compliance consists of 2008 model year vehicles. This fleet reflects the wide variety of vehicles currently preferred by U.S. car purchasers. This includes vehicles with sufficient passenger capacity for large families. NHTSA and EPA presume that these vehicles will continue to be preferred by many purchasers in the future. In fact, both the GHG and fuel economy standards account for the inherently higher fuel consumption of larger vehicles by basing the standards on vehicle size ('footprint', the product of vehicles' track width and wheel base). Therefore, EPA disagrees with Mr. Shaw that the proposed and final GHG and fuel economy standards are not feasible for a wide range of vehicle types and will limit the types of vehicles which will be produced by manufacturers and made available to customers

5.8.4. Manufacturer's Application of Technology

Organization: American Petroleum Institute

Comment:

Fuel Specification Changes: The proposed rule and Draft Technical Support Document outline several options available to automakers in achieving fuel economy improvements. One of the options is Gasoline Direct Injection (GDI) with lean burn technology. EPA and NHTSA state that sulfur specification below 15 parts per million (ppm) is a key technical requirement to enable lean burn GDI. The Alliance of Automobile Manufacturers is currently advocating a maximum allowable sulfur concentration of 10 parts per million to enable Lean Burn GDI. However, EPA and NHTSA analyses did not consider lean burn GDI technology for the 2012-2016 timeframe of this rulemaking because of the cost and short compliance timeframe.

Likewise, EPA should ensure that fuel specification changes should not be considered in this rulemaking without adequate consideration for the associated impacts on the refining industry. Since lean burn GDI technology is not necessary or even expected to be developed in order to comply with this rulemaking, a sulfur specification change is unnecessary. [OAR-2009-0472-7143.1, p.10]

EPA Response:

Consistent with the proposal, EPA is not considering the use of lean-burn gasoline direct injection technology in projecting means by which manufacturers would comply with the final GHG standards. Therefore, there is no associated need for ultra low sulfur gasoline to enable compliance in the MY 2012-2016 timeframe. However, EPA may consider the benefit of this engine technology when evaluating GHG standards beyond the 2016 model year. If that is the case, EPA will also consider the feasibility and cost of gasoline sulfur reduction to enable lean-burn technology.

Organization: Mr. Richter - Environmental Capital Partners

Comment:

The first, and most importantly, is the competitiveness of our auto industry relies on it, it relies on innovation. In the global economy, only those companies that continue to improve their technologies maintain market share, and these examples are Apple and Microsoft in the IT sector. The money and effort spent by the U.S. auto industry to maintain low mileage standards has torpedoed our own car industry and left us less competitive and innovative at a time of rising oil prices, of course, and increasing demand for more efficient, less polluting cars. As a result, today's average new vehicle sold in the U.S. has virtually the same fuel economy as a new vehicle sold 20 years ago. [Comment submitted as testimony at the New York public hearing [EPA-HQ-OAR-2009-0472-4621, pp.161-162]]

EPA Response:

EPA appreciates the implication of Mr. Richter's comment that the proposed GHG standards will help the U.S. auto industry innovate in the area of fuel efficiency and GHG emission control and help maintain its competitiveness both in the U.S. and globally. EPA did not attempt to monetize the value of this benefit. Such benefits are difficult to quantify, but directionally support the need for this final rule.

Organization: Ford Motor Company

Comment:

Transparency

Ford is generally supportive of the approach that the agencies are proposing for using third-party sources to forecast future industry sales volumes across the different vehicle segments. We

utilize some of the same sources (e.g. J.D. Power). However, predicting various technology penetration rates, benefits, and overall costs is more complex and is predominately a function of manufacturers' confidential business and product plans. To the extent that the agencies will use other sources for this type of information, Ford is concerned about how robust that information will be in determining the stringency and feasibility of the standards. As discussed earlier, the methodology used to establish the truck piecewise linear lower limit is an example of this concern.

Ford is applying new technologies and making considerable investments in future innovations. Our confidential submission in response to the Request for Product Plan Information and other agency inquiries reflects these actions and quantifies their impact on our ability to improve fuel economy and reduce GHG emissions. Inherent in these plans are risks including customer acceptance, timing, technology interaction, attribute trade-offs and competing resource priorities.

Ford recommends that the EPA only release current engine, transmission and fuel economy information, in a manner consistent with the practice for the current (2009 MY) EPA Fuel Economy Guide. There should be no disclosure to the public of any confidential business information or trade secrets, including information relating to cost and financial expenditures, warranty, model-specific product plan projections (including vehicle and volumes), powertrain and vehicle hardware detail, and associated fuel economy. Disclosures of this kind would result in significant competitive damage and would discourage innovation and competition among manufacturers generally. The Freedom of Information Act, and EPA's own regulations, provide for the protection of confidential business information from public disclosure. See 5 U.S.C. § 552(b)(4) and 40 CFR Part 2, Subpart B. See also Section 208(c) of the CAA related to the protection of trade secrets. The proposed rule here would not, and should not seek to, alter any of these protections for confidential business information or trade secrets. Accordingly, any disclosures in the Compliance Report or the Fuel Economy Trends report should not include proprietary information. Moreover, EPA should follow the procedures outlined in 40 CFR Part 2, Subpart B, to resolve any issues regarding the proposed disclosure of information for which a manufacturer has asserted a claim of confidentiality. [OAR-2009-0472-7082.1, pp. 25-26]

EPA Response:

EPA appreciates these comments and assures Ford and all agency stakeholders that confidential business information will always be treated as such, and any potential disclosures of information will be handled according to the Code of Federal Regulations. Importantly, EPA has not relied on such future product planning in setting the GHG standards. Instead, EPA has used publicly available information to build a baseline and reference case fleet, and has then relied on the OMEGA model to apply technology packages using EPA (and NHTSA) generated cost and effectiveness information for individual technologies. In the end, the fleet makeup is generated by the OMEGA model and not by using manufacturer product plans. For that reason, manufacturers need not worry that the technology penetrations predicted by the OMEGA model reflect product plan information provided confidentially to EPA.

5.8.5. EPA Projections for How Manufacturers Would Decide Between Options to Improve CO2 Performance to Meet a Fleet Average Standard

EPA Response to Comments

Organization: International Council on Clean Transportation

Comment:

ICCT agrees with the concept of manufacturer learning and supports the use of learning curves to adjust costs. This empirical observation was described for the first time by aircraft pioneer Wright in 1927 and has been found to be true for many technologies and industry sectors in general. Therefore, it is reasonable to expect direct costs for fuel economy measures to decrease as market introduction of the technologies applied proceeds, as suggested by both agencies.

Determination of appropriate learning curves and how they should be adjusted over time and production volumes is not easy. However, the adjustments have a major impact on costs assessments. ICCT believes this area should be developed further for future rulemakings. Following are some specific suggestions for areas of improvement.

According to learning curve theory, the observed decrease of production costs is ascribed to three effects: (1) "Learning by searching": Optimization of product properties caused by scientific research (e.g. reducing the amount of a catalyst needed for an exhaust after-treatment device). (2) "Learning by doing": Optimization of production processes caused by experience gained during ongoing production (e.g. reduction of mounting times for an existing assembly line manufacturing process). (3) "Economies of scale": Reduction of production costs caused by advantages from transition from prototype manufacturing of small quantities to mass production (e.g. lower purchase prices for pre-products and raw materials due to increased market power).

Except for "learning by searching" the cost reducing effects are caused by increased production volumes rather than time passing. For most of the technologies assessed in the proposal it is reasonable to assume that most of the time-dependent research would have been completed by 2012, which is the first year of learning curves are applied in the proposal. Given generally accepted elements of the concept of learning curves, a production volume-based assessment of future costs is more appropriate than a time-based approach.

The learning curve rate describes the rate of cost reductions for each doubling of production volume. For example, a volume-based learning curve rate of 10% would mean that initial costs would be reduced by 10% as cumulative production volume doubles. An important feature of the concept is that doubling of cumulative production volume happens at a relatively fast rate during early implementation of a new technology but more slowly later on. Consequently, cost reduction slows down as application of the technology becomes more widespread.

The agencies handle these differences by classifying technologies into groups for which none, volume or time based learning curve effects are assumed (Table 3-4 on page 3-10 of the TSD). ICCT agrees it is appropriate to apply a lower rate of learning to some of the technologies assessed. However, the agencies applied a flat rate of 20% for all technologies to which learning was applied, and did not apply any volume based learning to other technologies. A better approach would be to vary the learning curve rate while retaining a volume-based approach for all technologies. A differentiation of learning curve factors by type of technology would likely improve the accuracy of the proposal.

As a technology becomes more mature and production volumes grow, the cost reduction process tends to slow down. The learning curve concept includes this effect, as the doubling of cumulative production volumes occurs at a faster rate during implementation process and at a slower rate later on. The agencies end the learning curve process and assume a 3% time-based decrease of production costs after completion of two 20% volume-based (NHTSA) or time based (EPA) learning curve steps. While this recognizes that the learning process slows down, the change is abrupt and somewhat arbitrary. ICCT believes it would be advantageous to use a model that is able to dynamically take into account cumulative production volume over time. This would apply a continuous learning curve rate over the entire lifetime for each technology, without having to assess threshold values for changing learning curve rates and floor cost values.

NHTSA assumes production costs to decrease by 20% as soon as a cumulative production volume of 300,000 units has been reached. This implies that the technology incremental cost estimates given in tables 3-20 to 3-22 of the draft TSD should be interpreted as costs for a cumulative production volume of 150,000 units. It would be helpful to clarify the correctness of this interpretation, in order to be able to compare the costs with other technology cost data.

ICCT does not agree that volume-based learning is over for the 'power-split hybrid electric vehicle' and only time-based learning curve is to be applied. While power-split hybrids have been on the market long enough to achieve high production volumes, the production ramp up has been very slow and the initial costs were very high. In addition, virtually all power-split hybrid vehicles have been equipped with NiMH batteries. Future vehicles will make use of Li-Ion battery technology, bringing about changes to the entire vehicle technology design.

[OAR-2009-0472-7156.1, pp.17-20]

EPA Response:

EPA agrees that varying the learning curve rate by type of technology would likely improve the accuracy of the cost estimates. However, EPA currently does not have sufficient information upon which to base such variation. The Agency welcomes information from ICCT or other sources that could shed light on how learning curve factors should be varied by technology type. Short of such information, EPA believes that the 20 percent factor used provides the best and appropriately conservative estimate of learning rates in the automotive sector.

EPA also agrees with ICCT that using a model that is able to dynamically take into account cumulative production volume over time would improve the cost estimates on a year-over-year basis, although EPA does not believe it would have any meaningful impact on the outcome of the analysis. That is, EPA does not believe it would provide any meaningful differences in the level of standard that could be supported or the overall cost of the Agency's rules. By comparison, NHTSA does take into account cumulative production volume over time although it still relies on threshold volume estimates made using good engineering judgment to determine where learning effects occur. In both cases – the EPA approach and the NHTSA approach – EPA believes that the cost estimates for 2016 MY vehicles are as good as can be predicted today. That is, EPA believes that the appropriate level of learning has been applied to the 2016 cost

estimates regardless of when the learning steps actually occured – 100,000 units; 500,00 units; year 2013; year 2015 – is not as important as having arrived at the best estimate for 2016.

As regards Tables 3-20 to 3-22 of the draft joint TSD, the costs presented there were the draft cost estimates used by NHTSA applicable in the 2012 MY. This should have been made more clear in the table headings.

As regards the comment on volume-based learning and power-split hybrids, EPA agrees with ICCT on this point. In fact, EPA actually applied volume-based learning in the proposal and have clarified that in chapter 3 of the final joint TSD (see Joint TSD Table 3-4).

5.9. Reserved

5.10. EPA Certification, Compliance, and Enforcement

5.10.1. Compliance with Fleet-Average CO2 Standards

Organization: General Motors
Ford Motor Company
Ferrari S.p.a
Association of International Automobile Manufacturers (AIAM)
Chrysler Group LLC (Chrysler)
Environmental Defense Fund
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
BMW of North America, LLC (BMW)
Public Citizen and Safe Climate Campaign
Union of Concerned Scientists
Natural Resources Defense Council
Sierra Club
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
People's Republic of China
New York State Department of Environmental Conservation
Automotive Aftermarket Industry Association (AAIA)
Chew, Yuli

Comment:

General Motors:

Among the highlights of the proposal is the recognition of the need for mechanisms to provide for compliance flexibility in the face of great uncertainty over future technology, developments and costs, customer acceptance of these technologies, and the price of fuels that consumers may see in the market place. All of these factors make it critical that automakers have some ability to

cope with changes or unexpected outcomes, and we believe the proposed rule provides such flexibility. (OAR-2009-0472-6185, p.11)

One area of difference between the NHTSA and EPA programs is the treatment of emergency/law enforcement vehicles within the CAFE/GHG programs. The CAFE law provides a manufacturer with the opportunity to exclude emergency vehicles from its CAFE fleet by providing written notice to NHTSA and EPA (49 USC 32902(e)). The EPA GHG regulatory program has not included such an exclusion opportunity for emergency/law enforcement vehicles. [OAR-2009-0472-6953.1, p.31]

This exclusion is very sensible and practical because these special purpose vehicles are specially outfitted in ways that adversely impact vehicle fuel economy/CO_2 emissions so they can effectively serve as the front line for law enforcement agencies throughout the United States. As such, they are engineered and equipped for extremely demanding performance in real-world emergencies -- situations rarely involved in normal civilian use. [OAR-2009-0472-6953.1, p.31]

EPA should provide a manufacturer with the same opportunity to exclude emergency vehicles from the GHG standards it adopts in this rulemaking. This is first of all important to further maximizing the consistency between the EPA and NHTSA regulations. Without this consistency, a manufacturer may find itself challenged to continue providing the performance needs of the federal, state and local governmental purchasers of emergency vehicles. If production of these vehicles becomes relevant in the overall compliance of a company with the EPA vehicle GHG program, a manufacturer must decide whether to degrade the performance of the vehicles or restrict their sales of this type of vehicle. Both are unnecessary and unfortunate outcomes for the constituencies that need these emergency vehicles. [OAR-2009-0472-6953.1, p.31]

GM recommends that EPA revise its rule to provide this important opportunity by (1) adding a definition of "emergency vehicles" to 86.1803-01 that mirrors or cross-references 49 USC 32902(e); and (2) amending 86.1818-12 to provide that for any vehicle for which a manufacturer provides notice to NHTSA and EPA of its exclusion from CAFE, the vehicle is also excluded from EPA's greenhouse gas standards. [OAR-2009-0472-6953.1, p.31]

Ford Motor Company:

Greenhouse Gas Emissions Testing and Data Generation Protocols

Ford strongly supports the proposal to use the current CAFE testing protocol to measure and report CO2 values. This enables the common use of vehicles, testing resources, databases and submittal/reporting to accomplish both GHG and CAFE requirements. Ford agrees with EPA's proposal to use common data substitution and analytically derived fuel economy (ADFE) provisions.

Consistent Fleets for the CAFE and GHG programs

One area of difference between the NHTSA and EPA programs is the fleets within the CAFE/GHG programs. The fleets differ by the treatment of emergency/law enforcement vehicles

and by the geographic areas included in CAFE and emissions programs. Both of these differences go against the agencies' stated intentions of harmonization, transparency, and parallel calculations and reporting. The following sections suggest small regulatory adjustments that could bring the fleets into alignment.

1. Emergency / Law Enforcement Vehicles

The CAFE law provides a manufacturer with the opportunity to exclude emergency vehicles from its CAFE fleet by providing written notice to NHTSA and EPA (49 USC 32902(e)). EPA's proposed GHG regulatory program should include a similar provision excluding emergency vehicles from the GHG fleet averaging requirement.

This exclusion is sensible and practical because special purpose vehicles such as the Crown Victoria Police Interceptor are specially outfitted in ways that give law enforcement officials the performance and features they need in a vehicle that serves a critical role in their police work. The vehicles are engineered and equipped to help the police respond to real-world emergencies -- situations that demand a lot of the vehicle, and that are rarely encountered in normal civilian use. On the whole, the addition of these features tends to reduce the fuel economy and increase the GHG emissions relative to the base vehicle. Below [See Table V at OAR-2009-0472-7082.1, p. 28] are some examples of features in Ford's law enforcement vehicles that negatively affect fuel economy.

EPA should provide a manufacturer with an opportunity to exclude emergency vehicles from the GHG standards it adopts in this rulemaking. This is important to maintaining consistency between the EPA and NHTSA regulations. Without this consistency, a manufacturer may find itself challenged to continue providing the performance needs of the federal, state and local governmental purchasers of emergency vehicles. If these vehicles cannot be excluded, and the production of these vehicles becomes a key variable in the ability of a manufacturer to comply with within the GHG program, that manufacturer may be forced to choose between 1) deciding whether to degrade the performance of the emergency vehicles, 2) deciding to restrict the sales of its emergency vehicles, potentially even exiting the market altogether, or 3) facing non-compliance with the federal GHG standards. Any of these outcomes would be both unfortunate and unnecessary. It is clear that, like the CAFE program, the GHG program should protect the law enforcement constituencies that need these emergency vehicles and depend on their performance.

Section 202(a) of the CAA allows EPA to prescribe standards "applicable to the emission of any air pollutant from any class or classes of new motor vehicles... " The language "class or classes" indicates that EPA may apply its standards to particular types or categories of vehicles, and likewise make exclude particular types or categories of vehicles when there is reason to do so. This language gives EPA the authority to incorporate regulatory provisions excluding emergency vehicles from the fleet average requirement.

Ford recommends that EPA revise its rule to provide this important opportunity by (1) adding a definition of 'emergency vehicles' to 86.1803-01 that mirrors or cross-references 49 USC 32902(e); and (2) amending 86.1818-12 to provide that for any vehicle for which a manufacturer

provides notice to NHTSA and EPA of its exclusion from CAFE, the vehicle is also excluded from EPA's greenhouse gas standards. [OAR-2009-0472-7082.1, pp. 28-29]

2. Geographic Location of GHG Fleet Vehicles

The CAFE law defines the vehicles that are to be included in EPCA. Effectively, this means the 50 states, the District of Columbia and Puerto Rico. Under Section 302(d) of the CAA, the term 'State' is defined to include the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of Northern Mariana Islands. As such, manufacturers are required to send U.S.-certified vehicles to these districts and territories as well as the 50 states.

In Ford's case, the additional territories under the CAA definition amounts to a difference of only about 1,000 vehicles in a model year. While this is a relatively small volume in comparison to Ford's overall U.S. sales, the addition of these vehicles to the GHG fleet average would create an administrative burden for Ford. These 'additional' vehicles are not easily identified on a model type, base level, configuration, or subconfiguration level. Furthermore, maintaining both a 'CAFE fleet' and a 'GHG fleet' is likely to cause confusion, and would add to the already difficult situation of credit tracking. The administrative burden in adding these vehicles to the fleet is greater than any environmental benefit one would hope to obtain. Moreover, having a difference in the fleet definitions would conflict with EPA's and NHTSA's intention of promoting consistency and allowing manufacturers to submit one data set in satisfaction of both CAFE and GHG requirements.

Since the CAFE fleet is defined by EPCA, it does not appear that NHTSA has the authority to broaden the list of territories to which the EPCA fleet definition applies. On the other hand, we believe that EPA has the discretion to align its GHG fleet with the CAFE fleet for administrative purposes. It is clear that all of the territories listed under the CAA must receive vehicles certified to U.S. emissions standards, and we are not suggesting otherwise. However, the vehicles delivered to such territories do not have to be counted under EPA regulations designed to determine fleet average GHG emissions. Ford therefore recommends that EPA amend the definitions in 86.1803-01 to clarify that, for purposes of emissions compliance reporting and fleet averaging only, the fleet is composed of vehicles for the 50 states, the District of Columbia and Puerto Rico. Alignment in this way will not cause any adverse emissions either overall or for the territories not mentioned in EPCA. Those territories will receive the same vehicles they would receive otherwise. By making the discretionary decision to exclude this small volume of vehicles from the fleet average determination, EPA will help align the fleets that manufacturers must manage and that the agencies will evaluate. [OAR-2009-0472-7082.1, pp. 29-30]

Ferrari S.p.a:

We believe that the Tier 2 test group can adequately represent CO_2 emissions for certification purposes. We agree with EPA that is proposing to require a single Emission Data Vehicle that would represent the test group for both Tier 2 and CO_2 certification. The manufacturer would be allowed to initially apply the Emission Data Vehicle's CO2 emissions value to all models in the test group, even if other models in the test group are expected to have higher CO_2 emissions.

However, as a condition of the certificate, this surrogate CO_2 emissions value would generally be replaced with actual, model-level CO_2 values based on results from CAFE testing that occurs later in the model year. This model level data would become the official certification test results (as per the conditioned certificate) and would be used to determine compliance with the fleet average. This approach gives more flexibility to vehicle manufacturers to plan fuel economy tests for the various vehicle models in the same test group. [OAR-2009-0472-7214.1, p.4]

Association of International Automobile Manufacturers (AIAM):

EPA proposes to release to the public GHG compliance information. *See* preamble page 49559. Any such release should not include proprietary confidential business information that was provided by the manufacturer to EPA. For example, public dissemination of information regarding manufacturer plans to earn future credits could release information about future product plans that would otherwise be confidential. EPA regulations regarding exemptions from the release of agency information to the public are based on the Freedom of Information Act, 5 USC 552(b). Those regulations exempt from public release "trade secrets and commercial or financial information obtained from a person and privileged or confidential." *See* 40 CFR Part 2, section 2.105(a)(4). Future credit plans should fall in this category. AIAM recommends that EPA's final rule clarify how confidential business information will be protected. [OAR-2009-0472-7123.1, p.17]

Chrysler Group LLC (Chrysler):

NHTSA's CAFE program allows manufacturer to exclude emergency vehicles from its CAFE fleet by providing written notice to NHTSA and EPA (49 USC 32902(e)). The EPA GHG regulatory program has not included this exclusion. [NHTSA-2009-0059-0124, p.36]

This exclusion is practical because these special purpose vehicles are outfitted in ways that adversely impact vehicle fuel economy/greenhouse gas emissions so they can effectively perform their duties throughout the United States. [NHTSA-2009-0059-0124, p.36]

Recommendation:

Chrysler recommends that EPA revise its rule by adding a definition of 'emergency vehicles' to 86.1803-01 that mirrors or cross-references 49 USC 32902(e); and amending 86.1818-12 to provide that for any vehicle for which a manufacturer provides notice to NHTSA and EPA of its exclusion from CAFE, the vehicle would also be excluded from EPA's greenhouse gas standards. [NHTSA-2009-0059-0124, p.36]

Environmental Defense Fund:

EDF recognizes the complex, calibrated policy-making involved in designing a program to achieve the outcomes in greenhouse gas reductions and fuel efficiency improvements provided for under the proposal while providing the flexibility for a smooth, cost-effective transition. In finalizing this proposal, we ask that the agencies examine the collective implications of multilayered flexibilities and the potential to erode the program's performance. While the

comments below examine these issues in more detail, we respectfully offer two overarching recommendations. [OAR-2009-0472-7285.1, p. 2]

Transparency and Accountability through Annual Compliance Reports. The Obama Administration and EPA Administrator Lisa Jackson have provided vital leadership in reclaiming transparency and accountability in government policy-making. The dual public policy import and complexity of this program warrant bringing to bear the rigorous transparency that is the hallmark of government accountability. Pursuant to 5 U.S.C. §553(e), EDF formally and respectfully petitions the U.S. Environmental Protection Agency and the U.S. Department of Transportation to finalize as part of this proposed rulemaking a commitment to provide an annual public compliance report examining the program's performance. The report should be publicly announced and accessible March of each year following the completion of the preceding calendar year. The compliance report should include any recommended adjustments to the program, enforcement actions, or prospective policy action to ensure the policy objectives are achieved. [OAR-2009-0472-7285.1, p. 2]

Enhanced Resources for Program Accountability. Under the Administrations of Presidents William Clinton, George W. Bush and Barack Obama, the U.S. Environmental Protection Agency has provided leadership in crafting policies to reduce a suite of airborne contaminants from the transportation sector. These initiatives, addressing a number of major source categories and a variety of pollutants, provide for considerable human health and environmental benefits. We respectfully ask that the Agency seek expansive compliance and enforcement resources to ensure that these initiatives are durable in achieving the emission reductions that will provide healthier air and a safer environment for millions of Americans. [OAR-2009-0472-7285.1, p. 2]

Alliance of Automobile Manufacturers (Alliance):

Fleet Average CO_2 Reporting Requirements (Proposed regulations in 40 C.F.R. 600.514-12)

EPA is proposing that manufacturers submit pre-model year and supplementary fleet-average CO_2 reports. [OAR-2009-0472-6952.1, p.51]

Confidential Business Information versus Transparency in Reporting

In the Joint Notice, U.S. EPA requests comment of potential changes in its annual Compliance and Trends reports and related publications in light of the GHG standards, as follows:

EPA periodically provides mobile source emissions and fuel economy information to the public, for example through the annual Compliance Report and Fuel Economy Trends Report. EPA plans to expand these reports to include GHG performance and compliance trends information, such as annual status of credit balances or debits, use of various credit programs, attained versus projected fleet average emission levels, and final compliance status for a model year after credit reconciliation occurs. We seek comment on all aspects of public dissemination of GHG compliance information. 74 Fed. Reg. at 49,559 (footnotes omitted). [OAR-2009-0472-6952.1, p.67]

EPA Response to Comments

The Joint Notice does not illuminate how U.S. EPA intends on expanding the annual Compliance and Fuel Economy Trends reports. Nor does it indicate whether U.S. EPA plans to expand any publications other than these reports. However, it is important to observe that much of the new information required in the proposed GHG regulations, like much of the certification-related information reported to U.S. EPA by individual manufacturers under other regulations currently in force, is confidential and competitively sensitive -- a fact recognized in one of the annual reports cited in the Joint Notice. Moreover, the Joint Notice proposes no changes in U.S. EPA's regulations governing the treatment of confidential business information in Part 2 of the Agency's regulations. See 40 C.F.R. §§ 2.201 et seq. [OAR-2009-0472-6952.1, p.67]

Therefore, the only reasonable interpretation of U.S. EPA's proposal is that the Agency's "expansion" of these reports is limited to considering (i) the release of additional aggregated data, rather than manufacturer-specific data or other information whose release would compromise a manufacturer's competitive position, (ii) certification data, and (iii) past model year information on GHG technologies that would be apparent to the public from inspection of a given vehicle. The Alliance members do not oppose the publication of aggregated, industry-wide data that, as has been the case historically, protects the confidential status of individual manufacturer's information submissions to U.S. EPA. The Alliance also does not oppose release of GHG emissions certification data nor the publication of technological information otherwise available to the public by alternate sources. [OAR-2009-0472-6952.1, p.67]

Two statutes structure and limit U.S. EPA's authority to expand the coverage and scope of its annual reports. Section 208(c) of the Clean Air Act requires U.S. EPA to avoid disclosures not consistent with the Trade Secrets Act, codified at 18 U.S.C. § 1905. See 42 U.S.C. § 7542(c) (requiring U.S. EPA to comply with "the purposes of §1905 of Title 18."). Section 1905 does not merely and narrowly protect 'trade secrets,' etc., but instead, any 'information which concerns or relates to the trade secrets.' 18 U.S.C. § 1905; see Wright et al., 26 Fed. Prac. & Proc. Evid. § 5644 (Trade Secrets Act is a 'good example' of an 'expansive' federal statute 'that include[s] much more than what is generally understood by the phrase 'trade secret."). The clause 'concerns or relates to' in §1905 establishes that Congress intended a broad interpretation be imparted to §1905 standing alone, in addition to Clean Air Act section 208(c)'s expansive reference to the 'purposes of section 1905.' U.S. EPA in the Joint Notice has suggested no basis to depart from its longstanding practice of disclosing solely information that would not compromise the competitive position of any manufacturer. Cf. Qwest Communications Intern. Inc. v. FCC, 229 F.3d 1172 (D.C. Cir. 2000) (where an agency departs from established precedent concerning disclosures without a reasoned explanation, its decision will be vacated as arbitrary and capricious); accord MCI Worldcom, Inc. v. General Services Admin., 163 F. Supp. 2d 28 (D.D.C. 2001), citing Pontchartrain Broadcasting Co., Inc. v. FCC., 15 F.3d 183, 185 (D.C. Cir. 1994), and Graphic Communications Intern. Union, Local 554 v. Salem-Gravure Div. of World Color Press, Inc., 843 F.2d 1490, 1493 (D.C. Cir. 1988). [OAR-2009-0472-6952.1, p.68]

In addition, U.S. EPA must respect the limits on its disclosure authority under the Freedom of Information Act, and in particular Exemption 4 therein that protects confidential business information of a competitively sensitive nature from public release. See 5 U.S.C. 552(b)(4); and see generally Public Citizen Health Research Group v. FDA, 704 F.2d 1280, 1290-1291 (D.C.Cir. 1983). Exemption 4 bars the release of company-specific sales and market share

information upon a showing that the disclosure of such information would impose competitive harm. See, e.g., Sharkey v. FDA, 250 Fed. Appx. 284, 287-292 (11th Cir. 2007: Continental Oil Co. v. Federal Power Com'n, 519 F.2d 31, 35-36 (Fifth Cir. 1975). The settled case law under Exemption 4 thus requires U.S. EPA to maintain the types of limits on disclosure of information in annual reports that it has traditionally maintained. Provided U.S. EPA's expanded reports respect those limits, and as such are expanded only insofar as the Agency's regulatory program will now cover GHG emissions in addition to other regulated emissions, the Alliance and its members do not object to the apparent intent of this provision of the Joint Notice. [OAR-2009-0472-6952.1, p.68]

Toyota Motor North America:

EPA proposes to determine compliance with the fleet average CO_2 standards when the model year closes out, as is currently the protocol under EPA's Tier 2 program as well as under the current CAFE program. The compliance determination would be based on actual production figures for each model year and on model level emissions data collected through testing over the course of the model year. EPA would then require manufacturers to provide this information to EPA via an end-of-year report. Final determination of compliance with fleet average CO_2 standards may not occur until several years after the close of the model year due to flexibilities of carry forward and carry back credits and the remediation of deficits. Any failure to meet the fleet average standard after credit opportunities have been exhausted would result in penalties, as prescribed under the CAA. [OAR-2009-0472-7291, pp.27-28]

Setting aside the issue of penalties for noncompliance with the proposed fleet average standard (discussed later in this Attachment), Toyota supports the concept of a fleet-wide average compliance calculation determined at the end of the model year. Such an approach is consistent with the approach used in the NHTSA CAFE program and would directionally support harmonization between the programs. [OAR-2009-0472-7291, p.28]

BMW of North America, LLC (BMW):

BMW believes the flexible compliance options provided in this proposed rule are a prerequisite and appropriate for auto manufacturers to achieve these aggressive technology forcing standards. This is especially true for manufacturers like BMW offering a 'feature-dense' product portfolio but having a low share of light trucks in their fleets. Such manufacturers face more stringent fleet standards requiring additional efforts to comply. Therefore, the proposed compliance options provide the needed lead time for the development and introduction of fuel saving technologies into their vehicle fleets. [OAR-2009-0472-7145.1, p.2]

Public Citizen and Safe Climate Campaign:

The agencies should improve compliance transparency by providing end-of-year compliance data for each model year. Manufacturers who are out of compliance but intend to return to compliance in a future model year should be identified in this report. Knowing where each manufacturer stands at the end of each model year will assist the public and the agencies in establishing the technologically feasible and economically practicable level of standards for

subsequent model years. This will also help agencies and the public evaluate whether the standards that have been promulgated years in advance have kept pace with the advancement and adoption of technology. Knowing whether automakers have fallen short or exceeded standards will help establish the technologically feasible level of standards for model years after 2017. [OAR-2009-0472-7050.1, p.4]

Union of Concerned Scientists:

We believe the agencies could further improve transparency by having a clear public accounting of credits and program compliance. Over the years, it has been exceedingly difficult to independently verify whether manufacturers are complaint with their CAFE obligations, and we have concerns that the same will hold true with manufacturers' vehicle greenhouse gas obligations. Given the numerous compliance flexibility mechanisms being proposed by the agency – as well as significant opportunity for trading, transferring, banking, and borrowing of credits – we feel it is critical that manufacturers' compliance ledgers be documented, publicly available, and sufficiently granular to assess by which measures companies are complying with the regulations. [OAR-2009-0472-7181.1, p.12]

For example, for each model year, this would include, but not be limited to, each manufacturer's: actual car average greenhouse gas emissions performance; actual light truck average greenhouse gas emissions performance; amount of credits (on at least a fleet average basis) accrued or used through advanced technology vehicle credits, early credits, A/C credits, off-cycle technology credits, flex fuel vehicle credits, and use of temporary lead-time allowance alternative standards; amount of total banks/debits accrued in each year; and a running balance of banks/debits. We [OAR-2009-0472-7181.1, p.12] urge the agency to undertake an effort to provide clear public accounting of credits and program compliance. [OAR-2009-0472-7181.1, p.13]

Natural Resources Defense Council:

Credit Transactions and Automakers' Credit or Debit Status Should be Transparently Reported Annually to Allow for Public Evaluation of Program Effectiveness

Effective public support for the National Program is dependent on transparency on that the program is working effectively. To enable the public to evaluate the effectiveness of the program, EPA should publish an annual public report that includes at minimum the following quantitative information on credits (in megagrams or metric tons) for each manufacturer's car and light truck fleets:

-the amount of cumulative credits or deficits;
-the amount of credit transfers made by a manufacturer between its car and light truck fleets (if any);
-the amount of credits traded between manufacturers including which manufacturers were involved and the car/truck credit origination and destination;
-the amount of credits generated, for each manufacturer's car and truck fleet, from the additional credit opportunities including: air conditioning related credits, Flex Fuel Vehicle and Alternative

Fuel Vehicle credits, Advanced Technology Vehicle Credits for electric vehicles, plug-in hybrids, and fuel cells, off-cycle technology credits, early credit options

For each of the five additional credit opportunities above, EPA should specify the basis for calculating the credits and indicate how many credits were awarded for each mechanism. For example, EPA should indicate how many plug-in hybrid electric vehicles earned advanced technology multiplier credits for a manufacturer's car fleet and how EPA calculated the credit per vehicle type. For off-cycle technology credits, EPA should specify what technologies earned the credit. For each manufacturer using the early credit pathways, EPA should describe for which pathway the credits were awarded. [OAR-2009-0472-7141.1, pp. 10-11]

Sierra Club:

Strengthen transparency measures regarding the status and impacts of credit accrual and use. We strongly support the proposal to make all information regarding credits, including status of credit balances and attained versus projected fleet average emission levels, publicly available. The proposal allows credits to be traded over a 9 year time frame; we strongly urge EPA to limit this timeframe and to publish data regarding credit balances and use on an annual basis, including sales of credits between companies. [OAR-2009-0472-7278.1, p.17]

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy:

Finally, we strongly encourage all test results to be made publicly available and easily accessible for both research and consumer awareness purposes. [OAR-2009-0472-7188.1, p. 10]

[University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.119-121]

People's Republic of China:

We suggest the United States regularly publishing the monitoring information about the greenhouse gas emissions and corporate average fuel economy of domestic and import vehicles. [OAR-2009-0472-11269, p.3]

New York State Department of Environmental Conservation:

Compliance and Enforcement (Preamble Section III.E)
We agree with EPA that an effective compliance program is essential to achieving the benefits of the standards. We are particularly pleased to see that EPA has not adopted the 'pay-to-pollute' philosophy of the CAFE program, where comparatively minor fines substitute for compliance. [OAR-2009-0472-7454, p.4]

EPA proposes to determine compliance after the model year ends, in a manner similar to the Tier 2 light duty vehicle emissions program. Manufacturers would produce a preliminary compliance plan including planned production, expected emissions values, and expected credit activity, etc,

with limited emissions testing data. Certificates of Conformity would be conditioned on ultimate satisfaction of the greenhouse gas average standard requirements. Complete CO2 test values would be submitted over the course of the model year, as is currently done with CAFE. Since deficits can be carried for three subsequent years, final compliance determination may not occur for several years. We Agree with EPA that this approach best accommodates credit banking and trading, and provides the most efficient use of manufacturer certification testing resources. [OAR-2009-0472-7454, p.4]

Yuli Chew, (private citizen)

I am very concerned that importers will be continuing to import large quantities of heavy duty trucks that will not meet the GHG fleet average on it own is they are included as part of a larger family. For example, GM might have been able to sell small quantities of Hummer H2 and yet meet the CAFÉ standard. At this moment, Hummer Brand has been sold to Sichuan Tengzhong of China. With attribute-based system, the impact of penalties is diluted. The importers may continue to import substantial quantities of these GHG unfriendly vehicles as just minor increased cost basis and do not participate in efforts to reduce GHG. I suggest that if the quantities of the importers exceed 4,500 vehicles per year, they should follow the same rule as for local large manufacturers or actions be curtailed. [OAR-2009-0472-7042.1, p.2]

I support a web-based transparent database reporting system to EPA assess validity of credits, especially those obtained from third-party credit brokers. [OAR-2009-0472-7042.1, p.3]

EPA Response:

In general, there was widespread support for the use of current CAFE testing protocol to measure and report CO_2 values, to provide a preliminary compliance plan to EPA, and to calculate a fleet-wide average greenhouse gas emission compliance level for each manufacturer at the end of the model year.

Transparency

EPA received considerable comment about the need for transparency in its implementation of the greenhouse gas program and specifically about the need for public access to information about Agency compliance determinations. Many comments emphasized the importance of making greenhouse gas compliance information publicly available to ensure such transparency. EPA also received comment from industry about the need to protect confidential business information. Both transparency and protection of confidential information are longstanding EPA practices, and both will remain priorities in EPA's implementation of the greenhouse gas program. EPA periodically provides mobile source emissions and fuel economy information to the public, for example through the annual Compliance Report[19] and Fuel Economy Trends Report.[20] As proposed, EPA plans to expand these reports to include GHG performance and compliance

[19] 2007 Progress Report Vehicle and Engine Compliance Activities; EPA-420-R-08-011; October 2008. This document is available electronically at http://www.epa.gov/otaq/about/420r08011.pdf

[20] Light-Duty Automotive Technology and Fuel-Economy Trends: 1975 Through 2008; EPA-420-S-08-003; September 2008. This document is available electronically at http://www.epa.gov/otaq/fetrends.htm

trends information, such as annual status of credit balances or debits, use of various credit programs, attained fleet average emission levels compared with standards, and final compliance status for a model year after credit reconciliation occurs. EPA intends to regularly disseminate non-confidential, model-level and fleet information for each manufacturer after the close of the model year. EPA will reassess data release needs and opportunities once the program is underway.

Other sources of public information that EPA may expand to include GHG compliance information include:

- Green Vehicle Guide - typically published in May, July, September, October and every three months until the end of the model year; (see www.epa.gov/greenvehicles);
- Certification test data summary – contains certification test data[21] - typically published in October; (see www.epa.gov/otaq/crttst.htm);
- Fuel economy test car list– contains city and highway test data[22] – typically published in October; (see www.epa.gov/otaq/tcldata.htm); and
- EPA Document Index System (DIS) - updated quarterly – contains applications for certification, copies of certificates, etc; (see http://iaspub.epa.gov/otaqpub/)

In addition, EPA and DOE publish the Fuel Economy Guide information on the web at www.fueleconomy.gov which contains a summary of all the Fuel Economy Labels (window stickers) on new cars and trucks. The FE Labels contain model type city, highway and combined fuel economy values (weighted 55% city and 45% highway) which have been adjusted to reflect real world conditions. Unadjusted city, highway and combined mpg values for each model type are also available at this site. Currently, the FE Guide is published in May, July, September, October, and then every 2-3 months until the end of the model year.

EPA will work with interested parties to release an appropriately detailed level of greenhouse gas compliance information and test data that satisfies the need for public review without compromising the CBI needs of industry. We do not intend to publish prospective manufacturer compliance plans, or future projected production volumes. Initially EPA intends to release actual end-of-year production volumes and GHG emissions information at the model type level. We anticipate publishing manufacturer and model type GHG information including:

- manufacturer's annual compliance level (credit/debit status for each applicable passenger car or truck category);
- the number and type of credits and debits accumulated each year;
- the number and type of early credits earned and reported with manufacturer's 2011 model year report;
- credit transfers for a manufacturer between car and truck categories; and
- credit trades between manufacturers.

[21] Currently does not contain CO_2 data.
[22] Currently contains total HC, CO and CO_2 emission data (but not CH_4 or N_2O data).

Concerns That Manufacturers Will Shift Light Truck Product into Heavy-Duty Truck Products

Comments from Mr. Yuli Chew expressed concern that automobile manufacturers would shift light truck product into heavy-duty truck product (which are unregulated for CAFE and GHG emissions).

On October 20, 1999, the International Center for Technology Assessment (ICTA) and 18 other environmental and renewable energy industry organizations filed with EPA a "Petition for Rulemaking and Collateral Relief Seeking the Regulation of Greenhouse Gas Emissions from New Motor Vehicles under Section 202 of the Clean Air Act." As discussed in the proposal (74 FR 49507, September 28, 2009), on April 2, 2007, the U.S. Supreme Court held in *Massachusetts v. EPA* that greenhouse gases were within the definition of air pollutant under the Clean Air Act and remanded the case to the U.S. Court of Appeals for the District of Columbia Circuit for further action. Heavy-duty vehicles are among the vehicle classes addressed by the petition and it is likely that EPA will respond to the petition as part of a future rulemaking.

Excluding Emergency and Law Enforcement Vehicles

Currently, emergency and law enforcement vehicles are excluded from CAFE requirements, ref. 49 USC 32902(e). Comments from Chrysler, Ford Motor Company and General Motors recommend that EPA provide the manufacturer "with the same opportunity to exclude emergency vehicles from the GHG standards" (as provided by CAFE requirements). Both manufacturers recommend such changes for consistency with CAFE requirements and to prevent problems supplying emergency vehicles and law enforcement vehicles (including vehicles with special performance needs) to federal, state and local governments.

These manufacturers believe this provision is necessary because law enforcement vehicles (e.g., police cars) must be designed with special performance and features necessary for police work -- but which tend to raise GHG emissions and reduce fuel economy relative to the base vehicle. These commenters provided several examples of features unique to these special purpose vehicles that negatively impact GHG emissions, such as heavy-duty suspensions, unique engine and transmission calibrations, and heavy-duty components (e.g., batteries, stabilizer bars, engine cooling). These manufacturers believe consistency in addressing these vehicles between the EPA and NHTSA programs is critical, as a manufacturer may be challenged to continue providing the performance needs of the federal, state, and local government purchasers of emergency vehicles.

EPA is not finalizing such an emergency vehicle provision in this rule, since we believe that it is feasible for manufacturers to apply the same types of technologies to the base emergency vehicle as they would to other vehicles in their fleet, and given the relatively small impact the limited number of emergency and law enforcement vehicles would have on a manufacturer's overall fleet average. However, EPA also recognizes that, because of the unique "performance upgrading" needed to convert a base vehicle into one that meets the performance demands of the law enforcement community – which tend to increase GHGs relative to the base vehicles - there could be situations where a manufacturer is more challenged in meeting the GHG standards than the CAFE standards, simply due to inclusion of these higher-emitting vehicles in the GHG

program fleet. Although EPA does not believe that the limited information in front of it at this time supports finalizing such an exclusion for emergency vehicles today, we do believe it is important to continue to assess this issue in the future. EPA plans to continue to assess the characteristics of these emergency vehicles and to continue to assess whether special provisions for addressing them are warranted, as requested by the manufacturers. EPA plans to undertake this evaluation as part of a follow-up rulemaking in the next 18 months (this rulemaking is discussed in the context of small volume manufacturers in Preamble Section III.B.6.).

Follow-Up Reports Documenting the Effectiveness of the Program

Comments from the Environmental Defense Fund recommended that EPA and NHTSA provide an annual public compliance report examining the program's effectiveness, including any recommended adjustments to the program, enforcement actions or prospective policy action to ensure the policy objectives are achieved.

As discussed in the *Transparency* section above, EPA periodically provides mobile source emissions and fuel economy information to the public, for example through the annual Compliance Report and the Fuel Economy Trends Report. EPA plans to expand these reports to include GHG performance and compliance trends information, such as annual status of credit balances or debits, use of various credit programs, attained fleet average emission levels compared with standards, and final compliance status for a model year after credit reconciliation occurs.

Geographical Location of Greenhouse Gas Fleet Vehicles

One manufacturer commented that the CAFE sales area location defined by Department of Transportation regulations is different than the EPA sales area location defined by the CAA. DOT regulations require CAFE compliance[23] in the 50 states, the District of Columbia, and Puerto Rico. However, current EPA emission certification regulations require emission compliance[24] in the 50 states, the District of Columbia, the Puerto Rico, the Virgin Islands, Guam, American Samoa and the Commonwealth of the Northern Mariana Islands.

The commenter stated that EPA has the discretion under the CAA to align the sales area location of production vehicles for the greenhouse gas fleet with the sales area location for the CAFE fleet and recommended that EPA amend the definitions in 40 CFR 86.1803 accordingly. Such an

[23] DOT regulations at 49 CFR 525.4(a)(5) read "The term *customs territory of the United States* is used as defined in 19 U.S.C. 1202." Section 19 U.S.C. 1202 has been replaced by the Harmonized Tariff Schedule of the United States. The Harmonized Tariff Schedule reads in part that "The term 'customs territory of the United States'...includes only the States, the District of Columbia, and Puerto Rico."

[24] Section 216 of the Clean Air Act defines the term commerce to mean "(A) commerce between any place in any State and any place outside thereof; and (B) commerce wholly within the District of Columbia."
Section 302(d) of the Clean Air Act reads "The term ``State" means a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa and includes the Commonwealth of the Northern Mariana Islands." In addition, 40 CFR 85.1502 (14) regarding the importation of motor vehicles and motor vehicle engines defines the United States to include "the States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, Guam, American Samoa, and the U.S. Virgin Islands."

approach would exclude from greenhouse gas requirements production vehicles that are introduced into commerce in the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana.

EPA believes that the approach suggested in the comments would introduce an undesirable level of complexity into the certification process and result in confusion due to vehicles intended for commerce in separate geographical locations being covered under a single certificate. In addition, the vehicles sold into these additional areas will have the same options for technology upgrade as vehicles sold in the areas coved by the CAFE program, and there is no technological basis to treat them differently. For these reasons, EPA will retain the proposed greenhouse gas production vehicle sales area location.

5.10.2. Vehicle Certification

Organization: Ford Motor Company
Mercedes-Benz (Daimler AG)
Association of International Automobile Manufacturers (AIAM)
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
National Association of Clean Air Agencies (NACAA)
Sierra Club
Motor and Equipment Manufacturers Association
Honeywell Transportation Systems
Cummins Inc.
New York State Department of Environmental Conservation
U.S. Coalition for Advanced Diesel Cars
Hyde, James

Comment:

Ford Motor Company

Ford supports use of the 3% confirmatory retest criteria for the GHG program. This is consistent with current fuel economy label and CAFE retest criteria. There is not any technical justification for different values. In addition, Ford supports an engineering evaluation in lieu of testing at altitude. Any deviation in emissions control practices could be described in the auxiliary emission control device descriptions submitted by manufacturers at certification. [OAR-2009-0472-7082.1, p. 10]

Test Cycle Requirements

Five-cycle testing is not appropriate for the GHG program. It is not consistent with the program goal of GHG compliance at the fleet level while mirroring the current CAFE program protocol that utilizes the FTP (city) and Highway tests (HFET). It would also increase the manufacturer burden, complexity, and prototype requirements without corresponding benefits.

In addition, Ford supports the current FTP 55/45 city/highway weighting split. Although a lot has changed since the 55/45 city/highway split was developed over 20 years ago, it should not be assumed that drivers commuting on the road today would get from point A to point B at a higher average speed. One must also consider that more time is spent on the road today during the trip (Le. congestion impact). The current 55/45 aligns more closely with the average consumers drive patterns, taking into account modern-day congestion. [OAR-2009-0472-7082.1, p.10]

Carbon-Related Exhaust Emissions Data

Ford does not support the agencies' request to provide fleet-average carbon-related exhaust emissions data (e.g. CWF* +1,571 *CO+C02). We understand that depending on the type of fuel other constituents would also require reporting; however, Ford sees no value in providing the agency fleet-average carbon related emissions values. Both carbon monoxide (CO) and non-methane hydrocarbon are currently regulated constituents, and with this rule CO2 will also be regulated. Additional reporting requirements should not be adopted. [OAR-2009-0472-7082.1, p. 11]

Submittal of Compliance Plans

Ford recommends that EPA approve the proposed CO2 compliance plan that it is requiring manufacturers submit before the model year and before the certification of any test group. EPA's vision of the compliance plan, as described in the NPRM, is as follows:

EPA is proposing that manufacturers submit a compliance plan to EPA prior to the beginning of the model year and prior to the certification of any test group. This plan would include the manufacturer's estimate of its footprint-based standard (Section III.B)... 74 FR at 49560.

EPA seeks comment on the proposal to require manufacturers to submit compliance plans, and also on the criteria the agency should use to evaluate the sufficiency of such plans.

In general, Ford has no objection to a requirement for manufacturers to submit a plan to EPA showing how the manufacturer intends to comply with fleet average GHG standards. One plan covering both the car and truck fleets should suffice. As we envision it, the plan would be submitted at the cert preview stage and would include: projected volumes for the car and truck fleet in aggregate and projected GHG fleet averages for the model year; projected fleet average air conditioning credits, information showing how the manufacturer plans to avail itself of any other flexible mechanisms; the manufacturer's plan for addressing any deficits that may have been accrued in past model years; and the manufacturer's overall projected credit/debit status at the end of the model year in question. The more specific model type information would not be provided at the certification preview meeting, but instead when available at the end of model year timing.

The fact that the manufacturer has submitted a compliance plan for EPA's review should not simply be forgotten once the model year is underway. Compliance with fleet average GHG standards depends not only on what the manufacturer does (producing X volume of vehicles with Y fuel economy), but it also depends how on consumers react to those vehicles, which in turn

depends fluctuations in fuel prices, and a host of other economic, demographic, and cultural trends that may affect consumer behavior. To the extent that manufacturers have difficulty achieving compliance with fleet average GHG standards, there is a good chance that such problems may be based on marked increases or decreases in fuel prices, economic instability, market shifts, Acts of God (e.g., weather events that force a plant to shut down for some period of time), strikes, or other developments outside a manufacturer's control. In the event of eventual noncompliance, the compliance plan submitted by the manufacturer should be considered in any potential enforcement action. If a manufacturer followed its plan but failed to achieve compliance due to changed external circumstances, the imposition of penalties may not be appropriate. [OAR-2009-0472-7082.1, pp. 12-13]

Reporting Requirements

EPA reporting requirements in Part 600.512-12 (Model Year Report)

Ford recommends that Part 600.512-12 include a statement that 'submission of data to the agency that is provided in sufficient detail such that the relevant fleet averages can be confirmed fulfills that portion of this regulation'. This will provide manufacturers with flexibility to work with agency staff to provide the required data in the most efficient manner. In the proposed regulation, EPA is very specific about what data is required to be submitted. Ford generally agrees with the regulation, except for the carbon-related exhaust emissions data as discussed earlier. Ford supports the agency's efforts to collect data in sufficient detail so as to confirm a manufacturer's calculations. However, much of the data required in 600.512-12 for the model year report is actually required to be submitted during the certification and fuel economy labeling processes. In fact, EPA staff has been working collaboratively with industry for a few years to use a new EPA VERIFY database. In designing VERIFY, EPA staff recognized that much of the final fuel economy data has previously been submitted. Consequently, data files sent to VERIFY actually reference 'index' or use identification numbers instead of resubmitting the same data time and time again.

Ford also recognizes that some of the data required in 600.512-12 is not included in submissions for other processes, such as the listing of both domestically and non-domestically produced car lines and corporate officer attestation. For this, manufacturers should have the option to submit a separate report for the model year that would contain just the additional information.[OAR-2009-0472-7082.1, pp. 13-14]

EPA reporting requirements in Part 600.514-12

Ford recommends that EPA include a statement in Parts 600.512-12,600.514-12 and 537.7 that 'submission of data to either agency that is provided in sufficient detail such that the relevant fleet averages can be confirmed fulfills the portion of this regulation.' Merely copying the CAFE pre-model year reporting requirements doesn't address long-standing issues with that reporting nor does it minimize a manufacturer's burden.

Part 600.514-12 includes requirements for duplicitous and outdated information such as interior volume index, which is already supplied by manufacturers as part of the carline submission at

certification and is used for fuel economy labeling classification, and also SAE net rated power in kilowatts and the number of carburetor barrels. In 2005, the Alliance commented upon this in comments for the rulemaking for the Average Fuel Economy Standards of Light Trucks, Model Years 2008-2011. The response from NHTSA was 'The NPRM did not propose to revise the data reporting requirements aside from requiring the footprint related data and elimination of data currently required to be reported is outside the scope of this rulemaking. Moreover, consideration of such revisions would require coordination with the EPA to ensure consistency between the two agencies' regulatory programs, given the joint responsibilities under the Energy Policy and Conservation Act (EPCA). However, the agency will work to evaluate the necessity of the data currently required to be reported and will consider potential revisions in future rulemakings.' 74 FR at 17654. For the final rule, the agencies should work together to streamline the reporting process and eliminate duplicative requirements. [OAR-2009-0472-7082.1, p. 14]

Mercedes-Benz (Daimler AG):

EPA requests comment with regard to whether the 3% value currently used during CAFE confirmatory testing is also appropriate for use in the CO_2 program to determine whether a re-test is required. See 74 Fed. Reg. 49454, 49562 (Sept. 28, 2009). DAG agrees that the traditional 3% CAFE variance factor is appropriate for determining whether a re-test is necessary. However, DAG believes it is critical for the confirmatory calculation procedure used for CAFE to be modified in the case of CO_2 compliance determinations.

Confirmatory testing that is within 3% of the manufacturer's original test results are within the parameters of normal testing variation and do not represent a disparity under 40 CFR Part 600.008-08 and 40 CFR Part 86.1835-01. The 3% factor is not the critical issue for CO_2 compliance. The critical issue is how EPA treats confirmatory test values that are also within the 3% variance factor.

Under the current CAFE testing regime, which EPA proposes to continue for CO_2, if a confirmatory test result is below the recognized 3% variance factor, the confirmatory test result is used as the compliance value. See 40 CFR Part 86.1835-01(iii). See also Dear Manufacturer Letter, VPCD-99-06 (LDV, LDT, SVM) April 22, 1999. Thus, under CAFE certification, if a confirmatory test value is within the recognized standard variation, EPA replaces the manufacturer's value. This represents the potential that each test configuration could have its manufacturer's CO_2 value reduced by up to 2.9% through the confirmatory test process. Such a variation is not large for any one model but can be significant if multiplied across a fleet of vehicles. In addition, such a variation is not as critical under a CAFE compliance program where the worst case scenario is a potential penalty payment. Under the CAA, however, EPA has noted that even small variations above the fleet standard can have significant consequences since the penalty option is not available.

In view of the need for manufacturers to be secure and precise in their CO_2 compliance planning, DAG recommends that these sections be amended to allow the manufacturer to continue to use the manufacturer's original test result that demonstrates a less then 3% variation in confirmatory testing, rather than the results of the confirmatory testing, as the official GHG and fuel economy test results. This would be similar to the system in Europe where the manufacturer's original test

result is deemed the official result if the confirmatory test is within 4% of the original testing. This system recognizes that testing discrepancies within the 3% are within normal testing variation and is consistent with not requiring yet further re-testing. This is true regardless of the number of confirmatory tests conducted.

This change is essential to allow manufacturers the appropriate certainty for planning purposes. Using the results of the confirmatory tests unduly endangers planning certainty because unanticipated discrepancies might reduce a projected compliance margin. As a result of the more draconian GHG enforcement program, manufacturers require more certainty that their original testing will match their final GHG results as long as those values remain within the normal testing variation parameter of 3%. [OAR-2009-0472-7193.2, pp.18-21]

Association of International Automobile Manufacturers (AIAM):

It is also not clear what the significance of a failure to meet the in-use standard would be. We presume that there would be enforcement consequences only if the fleet average standard is not met, so only a widespread deterioration problem would affect fleet average compliance. There should be no enforcement consequences directed at a single model, without evidence of fleet average noncompliance. In any case, EPA should clarify in the final rule what procedure it would follow in enforcing a noncompliance with in-use standards, and what would constitute such a noncompliance. [OAR-2009-0472-7123.1, p.7]

EPA proposes to require manufacturers to submit a pre-model year compliance plan and conduct a pre-model year conference with Agency staff. *See* preamble at 49560. The EPA plan would be similar to the CAFE pre-model year report but would also contain information on anticipated credits. The preamble does not identify a clear purpose for the review of the plans, criteria for evaluating the plans, or consequences if EPA finds the plans to be unacceptable. [OAR-2009-0472-7123.1, p.16]

Alliance of Automobile Manufacturers (Alliance):

CREE

• CO is already a regulated constituent; therefore, there is no need to include it as an additional requirement in CREE.

• EPA is proposing that CH4 be a regulated constituent. Since NMHC is already a regulated constituent, there would be no need for HC to be included in CREE.

• The CREE equations in several sections of 40 C.F.R. 600-113-08 [i.e., (h)(2), (i)(2), (j)(2), (k)(2) &(l)(2)], appear to put constituents in a CO2-equivalent value. The HC components, however, do not follow this convention and instead use carbon weight fraction (CWF). Also, it is unclear how the CH4 factor of 10.916 in (k)(2) was determined. [OAR-2009-0472-6952.1, p.43]

• The "double jeopardy" issue associated with including previously regulated constituents into the CREE calculation will be avoided. [OAR-2009-0472-6952.1, p.44]

Given the above issues and the fact that CH4, N2O and all the non-CO2 CREE constituents are marginal contributors to GHG, the Alliance proposes a simplification: regulate only CO2 emissions with the addition of a factor to account for the contribution of CH4 and N2O. This would mean that anywhere the currently proposed regulation requires the use of CREE, CREE would be replaced with the measured CO2 value plus an added factor to account for N2O and CH4. [OAR-2009-0472-6952.1, p.44]

In the preamble, EPA proposes that manufacturers submit a compliance plan prior to the beginning of the model year and prior to the certification of any test group. This contradicts the regulatory language in 600.514-12(a)(2)(i) which states "The pre-model year report required by this section for each model year must be submitted during the month of December (e.g., the premodel year report for the 2012 model year must be submitted during December, 2011)." [OAR-2009-0472-6952.1, p.51]

EPA also needs to clarify what information is required in the pre-model year and supplementary reports. [OAR-2009-0472-6952.1, p.51]

Recommendation:

Assuming that EPA wants the GHG pre-model year report before the certification of any test group, the report would have to be due in December of the model year minus two years (e.g., MY 2012 report would be due in December 2010) and EPA should correct the regulatory language accordingly. [OAR-2009-0472-6952.1, p.51]

Manufacturers use various methods for projecting their fleet average CO2 compliance so details such as model type CO2 values may not be available at the time the certification preview meeting as suggested in the preamble. Therefore, the Alliance suggests that the only items needed for the GHG pre-model year report are the projected total production volume, projected fleet average CO2 values, projected fleet average CO2 standards and projected fleet average CO2 credit status. The additional detail could be made available in the same timeframe as the pre-model year CAFE reports that are required by NHTSA. [OAR-2009-0472-6952.1, p.51]

There is no need for EPA to spell out the detail regarding what would be required in a "supplementary" report. The regulation should simply be that the supplementary report should contain sufficient detail to allow proper analysis of the situation. The Alliance supports EPA's proposed mobile sources GHG reporting requirements for CO2 measuring and reporting of new vehicles in accordance with the current emissions certification procedures. EPA has also expressed an interest in collecting additional in-use data as a means for continually updating and improving inventory assessments from total mobile source fleet emissions. [OAR-2009-0472-6952.1, p.51]

Confirmatory Testing Process (Proposed regulations in 40 C.F.R. 86.1835-01 and 600.008-08)

EPA has proposed to add a "within 3%" requirement for CO2 when determining whether additional confirmatory testing needs to be performed. In addition, EPA has proposed that a

manufacturer needs to accept the highest CO2 value if they are accepting the lowest FE value during the confirmatory test process. [OAR-2009-0472-6952.1, p.52]

The proposed addition of a 3% CO2 requirement creates an additional pathway that could lead to additional manufacturer and EPA confirmatory testing burden. The additional testing could potentially delay certification schedules and vehicle launch. The Alliance fails to see how this duplicative judgment criterion can be justified in terms of overall GHG benefit. [OAR-2009-0472-6952.1, p.52]

Recommendation:

Because of the close relationship between CO2 and FE, the addition of the CO2 requirements only serve to make the decision-making process more complicated without any real benefit. The manufacturers propose the removal of the new CO2 criteria and to continue to allow the decisions to be made based on the FE criteria. [OAR-2009-0472-6952.1, p.52]

Running Change Data Requirements (Proposed regulations in 40 C.F.R. 600.507-12)

EPA has proposed additional criteria for EV, HEV, PHEV, fuel cell and advanced technology vehicles. The proposed criteria states that additional data is required if calibration changes are made that result in a 4% decrease in FE. [OAR-2009-0472-6952.1, p.52]

Recommendation:

The real purpose of the running change data requirements is to provide the method for the possible recalculation and updating of fuel economy label values. Therefore, these criteria should be deleted from the regulation and readdressed in future advanced technology FE label rulemakings. [OAR-2009-0472-6952.1, p.53]

Toyota Motor North America:

In addition to CO2, EPA proposes that the emissions measured from each test vehicle shall include hydrocarbons (HC) and carbon monoxide (CO), for purposes of compliance with the fleet average and in-use standards. All three of these measured exhaust constituents are used to determine the amount of fuel burned over a given test cycle via the 'carbon balance equation' and are an integral part of the current fuel economy test and calculation. To account for the carbon-related combustion products, HC emissions are adjusted by a coefficient that reflects the carbon-weighted fraction (CWT) of the fuel being burned and CO emissions are adjusted by a coefficient that Page 4 of 31 reflects the CWF of the CO molecule. EPA proposes that the carbon related exhaust emissions of each vehicle be calculated according to the following formula, where HC, CO2 and CO2 are in units of grams per mile:

CREE g/mi = CWF*HC + 1 .571 *CO + CO2 [OAR-2009-0472-7291, pp.7-8]

Toyota has concerns with EPA's CREE proposal for several reasons.

-The CREE calculation does not lend itself well to a fleet average standard. A better metric would be using COZ to determine compliance with fleet average standards .

-HC and CO are already regulated constituents, so there is no need to again include these emission measurements into another standard, as proposed.

-The contribution of HC and CO in the CREE formula is approximately 1% of the overall CO2 equivalent value. [OAR-2009-0472-7291, p.8]

Thus, there appears to be little technical basis to support the proposed CREE calculation. [OAR-2009-0472-7291, p.8]

EPA proposes to keep the current Tier 2 structure for cars and trucks in the certification requirements for CO2. At certification, manufacturers would use the CO2 emission level from the Tier 2 Emission Data Vehicle (EDV) as a surrogate to represent all of the models in the test group. Following further certification testing would generally be required to demonstrate compliance with the fleet average CO2 standard. EPA's issuance of a certificate would be conditioned upon the manufacturer's subsequent model level testing and attainment of the actual fleet average. EPA proposes to require a single EDV that would represent the test group for both Tier 2 and CO2 certification. The manufacturer would be allowed to initially apply the EDV's CO2 emissions value to all models in the test group. However, as a condition of the certificate, this surrogate CO2 emissions value would generally be replaced with actual, model level CO2 values based on results from CAFE testing that occurs later in the model year. This model level data would become the official certification test results and would be used to determine compliance with the fleet average. [OAR-2009-0472-7291, p.28]

Toyota clearly supports the establishment of a fleet average CO2 standard. However, Toyota has concerns with the practical aspect of EPA's proposal. These standards will not be established until completion of all model level testing at the end of the model year. Thus, a manufacturer could be producing 'noncomplying vehicles' during the model year and would not know it until after the model year fleet average calculations were completed. Depending on the interpretation of the regulations, a manufacturer could be deemed to have produced uncertified configurations. Toyota does not support conditional certificates as EPA proposes. [OAR-2009-0472-7291, p.28]

3% CO2 Criteria

As part of the current CAFE and Tier 2 compliance programs, EPA selects a subset of vehicles for confirmatory testing with the goal of validating the manufacturers test results. EPA proposes that CO2, N2O, and CH4 would be added to the emissions measured as part of the Tier 2 and CAFE confirmatory testing. These emission values measured at the EPA laboratory would continue to stand as official as is current practice under the existing regulatory programs. [OAR-2009-0472-7291, p.29]

EPA's proposal would follow the current practice of fuel economy testing in that, during EPA's confirmatory testing the EPA CO2 value differs from the manufacturers value by more than 3%, manufacturers could request a re-test. The results of the re-test would then stand as official

regardless of manufacturers previous value. In the NPRM, EPA proposes to allow the re-test request based on 3% or greater disparity since a manufacturers fleet average emissions level would be established on the basis of model level testing only. EPA requests comment on whether the 3% value currently used during the CAFE confirmatory testing is appropriate and should be retained under the proposed GHG program. [OAR-2009-0472-7291, pp.29-30]

Toyota believes that EPA's proposed 3% threshold on CO2 is unnecessary. Vehicle fuel economy, which is closely correlated to tailpipe CO2, has been reported by the industry since the advent of CAFE program in 1975. The current 3% criteria on fuel economy under the CAFE confirmatory program has been an effective means for making confirmatory judgments on manufacturers fuel economy results. As a result, assigning another 3% criteria on CO2, as EPA proposes, seems like an unnecessary certification requirement when the 3% fuel economy threshold can accomplish the same confirmatory objective. Additionally, Toyota is concerned that introducing an additional 3% criteria for CO2 adds no value to the confirmatory process while imposing the risk of causing delays in certification and vehicle start of production. [OAR-2009-0472-7291, p.30]

National Association of Clean Air Agencies (NACAA):

Fourth, EPA indicates that it will continue to use the same test methods and test fuels to certify vehicles affected by this proposal. NACAA recommends, however, that EPA begin using real-world fuels. Similarly, NHTSA should also use real-world fuels for testing purposes. The association also recommends that EPA determine GHG emissions from new vehicles based on a calculation that incorporates lifecycle costs. [OAR-2009-0472-7071.1, p.3]

Sierra Club:

The proposed greenhouse gas and fuel economy standards represent a tremendous step forwards in terms of reducing pollution and improving vehicle efficiency. However, the tests used to measure fuel economy and vehicle emissions compliance remain mired in the 1970s. EPA is proposing to use the two tests that currently determine compliance with CAFE standards, the Federal Testing Procedure (FTP), or "city" test, and the Highway Fuel Economy Test (HFET), or "highway" test. Rife with arcane assumptions that do not represent real-world driving conditions or behaviors, these two tests result in fuel economy values that are significantly higher than those achieved in real-world driving – the new greenhouse gas standards correspond to CAFÉ values and will similarly differ from real world emissions. [OAR-2009-0472-7278.1, p.17]

Designed when the national speed limit was 55 miles per hour, drivers are assumed to average 48 miles per hour and reach a maximum of 60 mph on the highway and to never turn on accessories such as air conditioners or heaters. Today, 99 percent of cars are sold with air conditioners and the EPA has found that more than 28% of driving occurs at speeds greater than 60 mph. Acceleration and deceleration rates used in the [OAR-2009-0472-7278.1, p.17] tests also do not represent real-world behavior. Dynamometers available in 1974 could not simulate real-world acceleration rates; therefore, the city and highway tests prescribed acceleration rates of 3.3 and 3.2, respectively. Today the same acceleration rates are being used to measure fuel economy,

even though on-road driving studies have found maximum acceleration rates of roughly 11-12 mph/second. [OAR-2009-0472-7278.1, p.18]

It is clear that new testing procedures are needed. We are encouraged by language in the proposed rule that "both agencies recognize that these test procedures are not fully representative of real world driving conditions," and that "both EPA and NHTSA are interested in developing programs that employ test procedures that are more representative of real world driving conditions, to the extent authorized under their respective statutes." We recognize that NHTSA is somewhat constrained by EPCA in its ability to develop new test procedures for cars, but has more latitude when testing light trucks. Similarly, we recognize that EPA has wide authority under the Clean Air Act to design new, more accurate testing procedures. Going forward, we strongly support the development of test procedures that reflect real-world driving conditions and behaviors and for MY 2017 and beyond and that standards be set at these real world levels so that labels and program compliance are using the same values. [OAR-2009-0472-7278.1, p.18]

Motor and Equipment Manufacturers Association:

Test Cycle Split for Driving Condition Calculations Must Be Revised to Reflect Real World
MEMA supports regulations aimed at improving real-world fuel economy and reducing emissions and we applaud the NHTSA and the EPA for their effort to harmonize these regulations. Today, in the 21st century, as growth in America has expanded far beyond our metropolitan centers, more and more driving miles are accrued on the highway. The driving profile of Americans has changed; hence the conclusion of a 2006 EPA study that found today's average driver accumulates about 57 percent of their miles on the highway. Yet the proposed rule relies on a 1970s-era driving calculation (a split of 55 percent city and 45 percent highway) that places more emphasis on city driving, thus promoting the development of technologies geared toward city driving. [OAR-2009-0472-7121.1, p.3]

The calculations in the rule, as proposed, will discourage the American auto industry from producing solutions that meet consumer demand for efficiency in highway driving. The industry will make cost-benefit decisions on technologies to maximize the fuel economy numbers with a 55-city/45-highway split and will make long-term technology and capital decisions without an assurance that those decisions will produce real-world results for the consumer and the country. The industry should not be put in a position to wait until 2017 when the EPA proposes to update its driving data (as discussed in the NPRM); having to wait gives rise to uncertainty, which, in the automotive industry, holds up decision-making and product planning. In an industry that relies heavily on long-term planning, design, and production cycles, this is not acceptable. The 2006 data provides much more current and accurate data on the driving profile, which will significantly reduce uncertainty. This rulemaking is the opportunity to make the change. The industry should be provided with firm direction now so that solutions chosen at present will not only be more realistic and meet today's consumer demands, but also will provide more industry certainty through 2017 and beyond. [OAR-2009-0472-7121.1, p.4]

In order to improve and achieve the goals of the National Program to represent driving conditions in the real world, NHTSA and EPA must consider revising the test result calculations to more accurately reflect the nation's driving behavior as illustrated in the 2006 study. MEMA

believes that America needs a broad portfolio of technologies that maximize our ability to achieve fuel efficiency and reduce emissions. A rule that ignores today's real world driving habits will limit choice while forcing consumers to base automotive purchases on outdated fuel efficiency information. Therefore, MEMA urges NHTSA and EPA to change the calculations in the final rule to reflect a 43 percent city/57 percent highway split. MEMA believes that real-world benefits can only be achieved with real-world measures. This simple approach - a minor change with big consequences - could have profound effects on deployment of research funds and capital investment, on the choices of vehicle technologies, and on the real-world results for the consumer, emissions reduction, and fuel efficiency. [OAR-2009-0472-7121.1, p.4]

Honeywell Transportation Systems:

Consistent with Honeywell's support for meeting EPA and NHTSA's fuel economy and GHG goals, we believe that the calculation procedures should be revised to reflect accurately actual in-use driving style. With respect to the proposed calculation of GHG emissions and CAFE, the city to highway weighting must be adjusted to more accurately match the national vehicle mile traveled ratio based on data that best reflect actual driving conditions. Using a more accurate ratio will promote the technologies that maximize efficiency for the lowest cost. [OAR-2009-0472-7165.1, p.7]

It is our understanding that EPA is aware of this discrepancy in test cycles as exemplified by the changes implemented for vehicle fuel economy labeling. Adjusting the weighting of test cycles will result in more robust control of CO2 emissions and petroleum consumption. This does not require new testing; rather EPA should adjust the VMT ratio based on a more realistic driving mix for calculating CAFE and carbon dioxide emissions. [OAR-2009-0472-7165.1, p.7]

Cummins Inc.:

The FTP and HFET 2-cycle test were established by EPA over 30 years ago to measure emissions and to calculate fuel economy for CAFE purposes. The two cycles are weighted 55% for city driving and 45% for highway driving. EPA previously determined that not only does the 2-cycle test not reflect real-world driving patterns, but also the 55/45 weighting does not reflect the typical driving experience. In 2006, EPA established a 5-cycle procedure to more accurately reflect what consumers achieve in the real world and used that to calculate fuel economy values for labeling purposes. Using the 5-cycle test, vehicle sticker miles-per-gallon (mpg) values for both city and highway generally decreased between 8% and 30%. However, EPA is still using the outdated 2-cycle test procedure. [OAR-2009-0472-7205.1, p.2]

In a rulemaking where EPA established the 5-cycle test procedure for fuel economy labeling, the Agency concluded that the national light-duty fleet's breakdown for vehicle miles traveled (VMT) is 43% city and 57% highway driving. EPA used this 43/57 cycle weighting to determine the city, highway and combined fleet fuel efficiency in its "Light- Duty Automotive and Fuel Economy Trends" annual reports which provide the Agency's estimate of the fuel consumption and CO2 emissions for a fleet over its useful life. However, EPA still continues to use the old 55/45 city/highway weighting for CAFE and now the proposed GHG standard program. We urge EPA and NHTSA to revisit this issue and revise the weighting factors to better reflect real-world

driving patterns such that the new GHG and CAFE standards drive vehicle designs which maximize the societal benefits. [OAR-2009-0472-7205.1, p.3]

New York State Department of Environmental Conservation:

Certification Test Fuel
New York has historically commented in applicable rulemakings that in-use fuels should be used for certification. The same holds true for this proposal. We believe that there [OAR-2009-0472-7454, p.3] exists some opportunity for manufacturers to reduce the effective stringency of the greenhouse gas standards by adjusting the composition of certification fuels within the overly broad ranges allowed by EPA. In particular, aromatics have approximately twenty percent greater CO2 emissions per unit of combustion energy than paraffins. Low aromatic content formulations that could not be produced across the gasoline or diesel fuel pool could easily be produced in certification fuel volumes. It appears that for gasoline a reduction in CO2 emissions of six to seven percent could be gained, with no corresponding emissions reduction in the field. Certification gasoline and diesel fuel specifications should be amended to require minimum aromatics content consistent with the norm for commercial gasoline and diesel fuel. [OAR-2009-0472-7454, p.4]

U.S. Coalition for Advanced Diesel Cars:

According to a 2006 EPA study, today's average driver accumulates approximately 57% of their miles on the highway. Yet the proposed rule relies on a 1970's-era driving calculation that places more emphasis on city driving, thus promoting the development of technologies geared toward 'stop and go' driving. The Coalition believes that America needs a broad portfolio of technologies that maximize our ability to achieve fuel efficiency and reduce GHG emissions. A rule that ignores today's driving habits will limit choice because it will discourage automakers from developing solutions that reflect the reality of modem consumer driving habits and needs. [OAR-2009-0472-7496, p.3]

The Coalition recommends a change to the proposed rule to reflect a 43% city/57% highway cycle weighting when calculating a vehicle's fuel economy and CO2 emissions. This simple update does not require any changes to the test procedures which we feel should not be changed in this ruling. This calculation change more accurately represents today's driving behavior based on the EPA's own assessments and data. The rule should capture a technology neutral approach that empowers consumers to choose a solution that is right for them. No specific vehicle technology will meet all of America's driving needs. All options must be available in order to achieve our administrative, legislative and societal objectives of improving fuel economy, reducing GHG emissions and advancing energy independence. [OAR-2009-0472-7496, p.3]

The Coalition maintains that Congress has made its intentions abundantly clear: EPA must provide the automotive industry with reality-based calculation procedures on which to compare the effectiveness of technology choices to regulated parties under rapidly changing limits. Specifically, the Coalition urges EPA and NHTSA to reconsider the following aspects of the proposed rule: [OAR-2009-0472-7496, p.3]

EPA Response to Comments

Use accurate data

EPA should not employ test cycle weighting factors that do not reflect current, real-world driving patterns where American fuel is consumed and GHG emissions are created. EPA should apply the findings of its exhaustive 2006 study of current American driving patterns that prove average consumers accumulate 43 percent of all miles at speeds akin to city driving and 57 percent at speeds akin to highway driving (43/57) This real-world definition of driving patterns is markedly different than historic, 1976-cycle weightings used for compliance under Corporate Average Fuel Economy (CAFE) regulations (55% city and 45% highway) that EPA and NHTSA propose to retain under the new GHG regulations. EPA should not launch 21st century regulations with a compliance mechanism driving technology selection and vehicle calibration that is rooted in a 1970s mileage mix that the agency has already declared obsolete in earlier rulemaking.[OAR-2009-0472-7496, p.3]

Be consistent

EPA employs the 43 percent city/57 percent highway cycle weighting for purposes of measuring the private and public results to be generated by the new rules in real-world driving, while proposing to retain the obsolete 55/45 cycle weighting for purposes of measuring the GHG saving potential of vehicles produced under the new rules. We urge EPA to universally use the most accurate calculation procedures for purposes of measuring both vehicle compliance and regulatory benefits. [OAR-2009-0472-7496, p.4]

Consider the consumer

By recognizing the adverse consequences of an outdated drivecycle weighting, we urge the Administration to promote broad consumer choice, not limit it. [OAR-2009-0472-7496, p.4]

The Coalition applauds EPA and NHTSA for maintaining the 'diesel equivalency factor' of 1.0 under the new rules. This long-established factor appropriately treats one gallon of diesel fuel to be equivalent to one gallon of pure gasoline in the calculation the agency utilizes to convert the results of its gram-per-mile tailpipe tests into mpg equivalents. These mpg equivalents are utilized by NHTSA in administering the CAFE program and by EPA for label fuel economy reporting to the American public. By withdrawing discussion of a change in the diesel equivalency factor - that would treat a diesel vehicle as if it were running on gasoline - the EPA has recognized that fuels have different characteristics as they generate motive power and are consumed in the American economy, including biofuels like E85 and B20. [OAR-2009-0472-7496, p.11]

The coalition urges the EPA to align its vehicle certification test procedures with fuels that are commercially available to the American public. Vehicles should be certified with fuels that American consumers can actually buy in the real world. [OAR-2009-0472-7496, p.12]

Mr. James Hyde (private citizen):

Certification Gasoline: Current certification gasoline specifications do not address fuel properties which impact the measured C02 emissions and fuel economy of vehicles. There are no specifications for the energy content of the fuel or for the carbon:hydrogen ratio. The loose specifications of aromatics at 0-35 vol% and olefins at 0-10 vol% leave much room for variations in both C02 emissions and fuel economy. The components of gasoline vary substantially in energy content and carbon weight fraction. Therefore, the measured emissions and fuel economy can vary (or be varied) depending on choices about the composition of the gasoline. [OAR-2009-0472-7258.1, pp. 1-2]

Fortunately, there are no methods for simultaneously increasing fuel economy and reducing C02 emissions by gasoline compositional changes. To the extent, however, that the C02 regulation and the CAFE regulation impact individual vehicle manufacturers, some gasoline compositional changes could enhance meeting one of the standards. [OAR-2009-0472-7258.1, p. 2]

C02 emissions depend only on the carbon content of the fuel, while fuel economy is impacted by all elements in the fuel which are capable of combining with oxygen and giving off heat. Principal among these is hydrogen. For most hydrocarbons found in gasoline, hydrogen constitutes from 7 to 17 weight % of the compound. Benzene is particularly hydrogen poor and therefore carbon rich. The properties of some typical gasoline components are shown in Table 1. [OAR-2009-0472-7258.1, p.2] [See OAR-2009-0472-7258.1, p. 2 for Table 1]

As can be seen in Table 1, toluene produces considerably more CO2 per unit of heat than do most other gasoline components. In fact, all aromatics will cause higher C02 emissions per gallon of gasoline than does whole gasoline. [OAR-2009-0472-7258.1, p.2]

The figure below (which uses actual data from EPA report No. EPA-450/4-80-036) shows the impact of aromatics content on g C02/gallon for commercial fuels. [OAR-2009-0472-7258.1, p.2] [See OAR-2009-0472-7258.1, p. 3 for the figure]

A manufacturer with sufficient CAFE credits (or willing to pay the monetary penalties), but having trouble meeting the CO2 standards could decrease the aromatics content of the gasoline used for certification to decrease C02 emissions. Current regulations do not address this issue. [OAR-2009-0472-7258.1, p.3]

Fuel Property Corrections to Fuel Economy Calculations: In 1984 General Motors petitioned EPA to have its CAFE numbers adjusted because the properties of the gasoline used to make the measurements had changed from that in 1975 when the program began. EPA chose to use an equation that 'would compensate for fuel property changes and yield a calculated fuel economy value equal to that which the current equation [then 40CFR600.113-78] would yield if 1975 test fuel had been used.' [50FR27188, July 1, 1985] The new equation [40CFR600.113-87] uses the carbon weight fraction (CWF), specific gravity (sg) and net heating value (NHV) of the actual gasoline and corrects the mpg to values for these parameters which were assumed to be current in 1975. The assumptions used here have not been verified for current technology vehicles or fuels. [OAR-2009-0472-7258.1, p. 3]

EPA Response to Comments

Substantially Similar: With the addition of *C02* as a certification emission EPA must consider a reinterpretation of the substantially similar interpretation for gasoline. Gasoline properties which impact *C02* emissions will be an additional criterion for determining if a commercial gasoline is substantially similar to certification gasoline. This leads to the issue that certification gasoline does not contain any oxygenates, while commercial gasoline is essentially required to contain an elevated level of oxygenates. On a *C02* per unit energy basis, ethanol is about 4% higher than certification gasoline. Blends of 10 vol% ethanol with certification gasoline would then produce about 0.4% more C02/mi (assuming that mileage is directly related to fuel energy content). [OAR-2009-0472-7258.1, p. 4]

The Basic Relationship Between CO2 Emissions and Fuel Economy: A basic premise of the combined GHG/CAFE rulemaking is that there is a definite and predictable relationship between CO2 emissions and fuel economy. In general this relationship exists when the CO2 emissions and fuel economy are measured with the same vehicle, fuel and test cycle/conditions. For certification gasoline EPA has essentially defined this relationship as 8887 grams CO2 equals 1 gallon. [OAR-2009-0472-7258.1, p. 5]

EPA, however, allows manufacturers to calculate fuel economy instead of measuring it. This is the procedure called 'analytically derived fuel economy' or ADFE. In the ADFE process, a manufacturer used fuel economy related properties of an untested vehicle to calculate what its fuel economy would be expected to be based on the fuel economy of a similar vehicle. There is, however, no procedure to calculate the expected CO2 emissions of the untested vehicle. In the past EPA has allowed the C02 emissions of the tested vehicle to be entered into its database. This practice distorts the C02 to mpg relationship and does not provide a correct value for CO2 emissions. Additionally, since the use of ADFE is highly variable among manufacturers, its impact is not uniform. The current rulemaking do not appear to address this concern. [OAR-2009-0472-7258.1, p. 6]

The magnitude of this effect is shown in the figure below which shows the percentage deviation from the nominal value of 8887 for MY2009 and Fuel 61 (the standard EPA certification gasoline). [OAR-2009-0472-7258.1] [See OAR-2009-0472-7258.1, p. 6 for the figure]

The data points outside the central cluster show the combined impacts of ADFE and fuel property corrections. The deviations from zero are much too large for the proposed programs. [OAR-2009-0472-7258.1, p. 6]

EPA Response:

Test Procedures

See section 5.1.2 for EPA's response to comments regarding the weighting of city and highway fuel economy and greenhouse gas emission test results.[25] See Section III.B.1 of the preamble to

[25] Comments from the Alliance did not directly address the city/highway test procedure, but did indirectly support the use of the current city and highway test procedures. For example, Alliance comments indicated that "The Alliance supports the joint rulemaking, including the proposed coordinated framework and structure. Further, the Alliance supports the proposal that both NHTSA and EPA use an attribute-based approach." AIAM comments

the final rule for more detailed information on CO_2 test procedures, Section III.C.1 on Air Conditioning Emissions, and Section III.B.7 for N_2O and CH_4 test procedures.

EPA will continue to allow certain testing flexibilities that exist under the CAFE program. EPA has always permitted manufacturers some ability to reduce their test burden in tradeoff for lower fuel economy numbers. Specifically the practice of "data substitution" enables manufacturers to apply fuel economy test values from a "worst case" configuration to other configurations in lieu of testing them. The substituted values may only be applied to configurations that would be expected to have better fuel economy and for which no actual test data exist. EPA will continue to accept use of substituted data in the GHG program, but only when the substituted data are also used for CAFE purposes.

EPA's regulations for CAFE fuel economy testing permit the use of analytically derived fuel economy data in lieu of actual fuel economy testing in certain situations.[26] Analytically derived data are generated mathematically using expressions determined by EPA and are allowed on a limited basis when a manufacturer has not tested a specific vehicle configuration. This has been done as a way to reduce some of the testing burden on manufacturers without sacrificing accuracy in fuel economy measurement. EPA has issued guidance that provides details on analytically derived data and that specifies the conditions when analytically derived fuel economy may be used. EPA will apply the same guidance to the GHG program and will allow any analytically derived data used for CAFE to also satisfy the GHG data reporting requirements. EPA will revise the terms in the current equations for analytically derived fuel economy to specify them in terms of CO_2. Analytically derived CO_2 data will not be permitted for the Emission Data Vehicle representing a test group for pre-production certification, only for the determination of the model level test results used to determine actual fleet-average CO_2 levels.

EPA is also retaining the definitions needed to determine CO_2 levels of each model type (such as "subconfiguration," "configuration," "base level," etc.) as they are currently defined in EPA's fuel economy regulations.

Note that additional Response to Comments information about test procedures are contained in section 5.1.2 of this document.

Retest Criteria

Under current practice, if during EPA's confirmatory fuel economy testing, the EPA fuel economy value differs from the manufacturer's value by more than 3%, manufacturers can request a re-test. Results of the re-test stand as official, even if they differ from the manufacturer value by more than 3%. EPA proposed extending this practice to CO_2 results, but manufacturers commented that this could lead to duplicative testing and increased test burden. EPA agrees that the close relationship between CO_2 and fuel economy precludes the need to

(outlined in section 5.1.2. of this Response to Comments document) indicate that "AIAM does not support fundamentally changing the fuel economy/greenhouse test procedures at this time. Our reluctance to support such changes is due to the impact that such changes could have on the effective stringency of the standards."

[26] 40 CFR 600.006-08(e)

conduct additional confirmatory tests for both fuel economy and CO_2 to resolve potential discrepancies. Therefore EPA will continue to allow a re-test request based on a 3% or greater disparity in manufacturer and EPA confirmatory fuel economy test values, since a manufacturer's fleet average emissions level would be established on the basis of model level testing only (unlike Tier 2 for which a fixed bin standard structure provides the opportunity for a compliance buffer).

Carbon-Related Exhaust Emissions (CREE) Data

EPA received comments from the Alliance, Ford and Toyota questioning the appropriateness of using CREE emissions instead of simply CO2 emissions or CO2 plus weighted CH4 and weighted N2O emissions. Toyota comments, for example, state that "The CREE calculation does not lend itself well to a fleet average standard. A better metric would be using CO2 to determine compliance with fleet average standards. HC and CO are already regulated constituents, so there is no need to again include these emission measurements into another standard, as proposed."

For the purposes of compliance with the fleet average and in-use standards, the emissions measured from each test vehicle will include hydrocarbons (HC) and carbon monoxide (CO), in addition to CO_2. All three of these exhaust constituents are currently measured and used to determine the amount of fuel burned over a given test cycle using a "carbon balance equation" defined in the regulations, and thus measurement of these constituents is an integral part of current fuel economy testing. As explained in Section III.B of the preamble to the final rule, it is important to account for the total carbon content of the fuel. Therefore the carbon-related combustion products HC and CO must be included in the calculations along with CO_2, and any other carbon-containing exhaust components such as aldehyde emissions from alcohol-fueled vehicles. CO emissions are adjusted by a coefficient that reflects the carbon weight fraction (CWF) of the CO molecule, and HC emissions are adjusted by a coefficient that reflects the CWF of the fuel being burned (the molecular weight approach doesn't work since there are many different hydrocarbons compounds being accounted for). Thus, EPA will calculate the carbon-related exhaust emissions, also known as "CREE," of each test vehicle according to the following formula, where HC, CO, and CO_2 are in units of grams per mile:

carbon-related exhaust emissions (grams/mile) = $CWF*HC + 1.571*CO + CO_2$

where: CWF = the carbon weight fraction of the test fuel

As part of the current CAFE and Tier 2 compliance programs, EPA selects a subset of vehicles for confirmatory testing at its National Vehicle and Fuel Emissions Laboratory. The purpose of confirmatory testing is to validate the manufacturer's emissions and/or fuel economy data. Under this rule, EPA will add CO_2, N_2O, and CH_4 to the emissions measured in the course of Tier 2 and CAFE confirmatory testing. The N_2O and methane measurement requirements will begin for model year 2015, when requirements for manufacturer measurement to comply with the standard also take effect. The emission values measured at the EPA laboratory will continue to stand as official, as under existing regulatory programs.

Test Fuel

The National Association of Clean Air Agencies (NACAA) and the U.S. Coalition for Advanced Diesel Cars commented that EPA and NHTSA should use test fuels that are commercially available to the American public and can be purchased in the real world. New York State and Mr. James Hyde commented that the current test fuel specifications for aromatics (currently 0-35% by volume) and olefins (currently 0-10% by volume) leave much room for variations in both CO2 and fuel economy;" and recommended that EPA should take a fresh look at these and other test fuel properties to determine if changes are necessary.

EPA is also concerned about the representativeness of current test fuel, but considers major revisions to test fuel(s) to be outside the scope of this GHG rule. Changes such as those suggested in comment would have ramifications for the stringency of EPA emission standards (for criteria pollutants and CO2 emissions); fuel economy labeling requirements, CAFE requirements and gas guzzler requirements. In addition, for CAFE testing EPA is required by statute to "use the same procedures for passenger automobiles the Administrator used for model year 1975 (weighted 55 percent urban cycle and 45 percent highway cycle), or procedures that give comparable results;" ref. 49 USC 32904(c) and 40 CFR 600.510-08.

EPA will take these comments under advisement if we initiate any future rules related to test fuel specifications used for emissions and fuel economy testing.

Conditional Certificates

There was general support among most commenters to harmonize GHG test procedures with CAFE test procedures, including the concept of issuing certificates based on the CO_2 certification level of the emission-data vehicle until additional fleet average data can be generated to demonstrate compliance with the fleet average CO2 standard. However Toyota expressed concerns with the practical aspect of issuing conditional certificates based on compliance with the fleet average CO2 standard at the end of the model year. Toyota is concerned that a manufacturer "could be producing 'noncomplying vehicles' during the model year and would not know it until after the model year fleet average calculations were completed." For that reason, Toyota did not support the concept of issuing conditional certificates.

Under Tier 2 and other EPA emission standard programs, vehicle manufacturers certify a group of vehicles called a test group. A test group typically includes multiple vehicle car lines and model types that share critical emissions-related features.[27] The manufacturer generally selects and tests one vehicle to represent the entire test group for certification purposes. The test vehicle is the one expected to be the worst case for the emission standard at issue. Emission results from the test vehicle are used to assign the test group to one of several specified bins of emissions

[27] The specific test group criteria are described in 40 CFR 86.1827-01, car lines and model types have the meaning given in 40 CFR 86.1803-01.

levels, identified in the Tier 2 rule, and this bin level becomes the in-use emissions standard for that test group.[28]

Since compliance with the Tier 2 fleet average depends on actual test group sales volumes and bin levels, it is not possible to determine compliance with the fleet average at the time the manufacturer applies for and receives a certificate of conformity for a test group. Instead, EPA requires the manufacturer to make a good faith demonstration in the certification application that vehicles in the test group will both 1) comply throughout their useful life with the emissions bin assigned, and 2) contribute to fleet-wide compliance with the Tier 2 average when the year is over. EPA issues a certificate for the vehicles included in the test group based on this demonstration, and includes a condition in the certificate that if the manufacturer does not comply with the fleet average, then production vehicles from that test group will be treated as not covered by the certificate to the extent needed to bring the manufacturer's fleet average into compliance with Tier 2.

The certification process often occurs several months prior to production and manufacturer testing may occur months before the certificate is issued. The certification process for the Tier 2 program is an efficient way for manufacturers to conduct the needed testing well in advance of certification, and to receive the needed certificates in a time frame which allows for the orderly production of vehicles. The use of a condition on the certificate has been an effective way to ensure compliance with the Tier 2 fleet average. The condition will be applied similarly under the greenhouse gas program.

Thus, EPA believes it is appropriate to, and will finalize the conditional certificate concept as proposed for several reasons, as follows:

- to reduce manufacturers' test burden;
- to be consistent with the Tier 2 fleet average NOx compliance requirements (which has experienced very few problems); and
- to harmonize the GHG process as much as possible with the current fuel economy and CAFE process,

Diesel Equivalency Factor

The U.S. Coalition for Advanced Diesel Cars supported EPA and NHTSA's proposal to maintain the current 'diesel equivalency factor' of 1.0 under the new rules, stating that this "long established factor appropriately treats on gallon of diesel fuel to be equivalent to one gallon of pure gasoline."

EPA received no other comments on this issue, and is finalizing as proposed the 1.0 diesel equivalency factor for purposes of measuring fuel economy values used in calculating manufacturers' CAFE levels.

[28] Initially in-use standards were different from the bin level determined at certification as the useful life level. The current in-use standards, however, are the same as the bin levels. In all cases, the bin level, reflecting useful life levels, has been used for determining compliance with the fleet average.

Running Changes

EPA proposed revisions to paragraph §600.507-12, regarding running change requirements for advanced technology vehicles (including electric vehicles, fuel cell vehicles, hybrid electric vehicles and plug-in hybrid electric vehicles). The proposed regulation changes would require manufacturers in some cases, to re-label and submit additional CAFE/GHG data for running changes which are expected to result in less fuel efficient (or optionally result in more fuel efficient) vehicle operation as compared to the original fuel economy/GHG emission data. The proposed revision to paragraph §600.507-12 is highlighted in the bold text, below:

> **§600.507-12 Running change data requirements.**
>
> (a) Except as specified in paragraph (d) of this section, the manufacturer shall submit additional running change fuel economy and carbon-related exhaust emissions data as specified in paragraph (b) of this section for any running change approved or implemented under §§86.079–32, 86.079–33, or 86.082–34 or 86.1842–01 as applicable, which:
>
> (1) Creates a new base level or,
>
> (2) Affects an existing base level by:
>
> (i) Adding an axle ratio which is at least 10 percent larger (or, optionally, 10 percent smaller) than the largest axle ratio tested.
>
> (ii) Increasing (or, optionally, decreasing) the road-load horsepower for a subconfiguration by 10 percent or more for the individual running change or, when considered cumulatively, since original certification (for each cumulative 10 percent increase using the originally certified road-load horsepower as a base).
>
> (iii) Adding a new subconfiguration by increasing (or, optionally, decreasing) the equivalent test weight for any previously tested subconfiguration in the base level.
>
> **(iv) Revising the calibration of an electric vehicle, fuel cell electric vehicle, hybrid electric vehicle, plug-in hybrid electric vehicle or other advanced technology vehicle in such a way that the city or highway fuel economy of the vehicle (or the energy consumption of the vehicle, as may be applicable) is expected to become less fuel efficient (or optionally, more fuel efficient) by 4.0 percent or more as compared to the original fuel economy label values for fuel economy and/or energy consumption, as applicable.**

Comments submitted by the Alliance recommended that "The real purpose of the running change data requirements is to provide the method for the possible recalculation and updating of fuel

economy label values. Therefore, these criteria should be deleted from the regulation and readdressed in future advanced technology FE label rulemakings."

EPA proposed these regulation changes for several reasons. First, EPA doesn't agree with the Alliance comment that "The real purpose of the running change data requirements is to provide the method for the possible recalculation and updating of fuel economy label values." Although the provisions of 40 CFR 600.314-08(b) require the manufacturer to recalculate and re-label vehicles in cases where the fuel economy decreases by 1.0 mpg or more (and may optionally re-label vehicles in cases where the fuel economy increases by 1.0 mpg or more) the proposed running change requirements also apply to CAFE and GHG requirements. Since these requirements are applicable to GHG and CAFE testing requirements, EPA believes that it is appropriate to include these changes in the current GHG/CAFE rule.

Second, the provisions of §600.507-12 were last updated in 1984 (49 FR 13832, April 6, 1984). At that time, EPA did not consider the fuel economy/GHG ramifications related to today's advanced technology vehicles.

Third, EPA is concerned that technically, the fuel economy of advanced technology vehicles can be influenced by a plethora of design parameters that are outside the normal design parameters of conventional vehicles. For example, fuel economy and GHG emissions of conventional vehicles are affected by changes in axle ratio, vehicle weight, and vehicle drag (or road-load horsepower), as currently addressed in the provisions of §600.507-12. However, the fuel economy and GHG emissions of advanced technology vehicles can be influenced by many other calibration parameters, including battery regeneration strategy, the percent of useable battery (deep cycle) energy used, the percent of electrical (verses engine) operation, the speed ranges during electrical operation, optimized internal combustion engine operation (e.g. calibrated to operate closest to best brake-specific fuel consumption), etc. These parameters for advanced technology vehicles are not addressed in the current provisions of §600.507-12. In some cases, the effect of calibration changes for these parameters may have considerably more impact on fuel economy/GHG emissions than changes in axle ratio, vehicle weight, and vehicle drag. EPA is concerned that without the proposed regulations, running changes could be made to production vehicles that may adversely affect the GHG emissions of the vehicle but that would not be required to be supported by test data. Such untested running changes could adversely affect and bias the fleet average GHG and CAFE calculations.

Fourth, EPA believes that it is appropriate to require relabeling when running changes to advanced technology vehicles result in fuel economy changes. This provides a safeguard to EPA that manufacturers won't take advantage of the labeling/running change process, e.g., by developing fuel economy labels on "best case" fuel economy pre-production fuel economy calibrations and then make running changes that improve driveability but decrease fuel economy in production vehicles. In addition, these regulation changes provide manufacturers with increased flexibility to re-label that demonstrate improved fuel economy. Without these regulation changes, manufacturers would be prohibited by the provisions of §600.314-08 from revising the fuel economy label values of vehicles with improved fuel economy until the next model year. Although the Alliance comments did not address this increased flexibility (to

optionally re-label vehicles when running changes improve fuel economy) EPA believes that the Alliance and other automobile manufacturers would not oppose this option.

Fifth, the regulation changes are not expected to increase manufacturer burden substantially. For example, in the 2010 model year, manufacturers re-labeled 8 out of 1135 total model types (as of February 1, 2010) due to running change reasons outlined in §600.314-08 and §600.507-12. Of the eight re-labeled vehicles, five resulted in increased fuel economy label values and three resulted in decreased in fuel economy label values. Thus, EPA believes that the regulations will have a relatively minor effect on manufacturer testing burden.

In summary, EPA does not believe that there is anything to be gained by delaying these running change requirements and re-proposing them in the ongoing fuel economy labeling rule (as recommended by the Alliance). Thus, for the reasons outlined above, EPA believes it is appropriate to finalize the revisions to 40 CFR 600.507-12 as proposed.

Content of Pre-Model Year Report

Several commenters raised concerns about EPA's proposal for requiring manufacturers to submit GHG compliance plans. AIAM stated that EPA did not identify a clear purpose for the review of the plans, criteria for evaluating the plans, or consequences if EPA found the plans to be unacceptable. AIAM also expressed concern over the appropriateness of requiring manufacturers to prepare regulatory compliance plans in advance, since vicissitudes of the market and other factors beyond a manufacturer's direct control may change over the course of the year and affect the model year outcome. Finally, AIAM commented that EPA should not attempt to take any enforcement action based on an asserted inadequacy of a plan. They felt that compliance should be determined only after the end of a model year and the subsequent credit earning period. The Alliance commented that there was an inconsistency between the proposed preamble language and the regulatory language in 600.514-12(a)(2)(i). The preamble language indicated that the compliance report should be submitted prior to the beginning of the model year and prior to the certification of any test group, while the regulatory language stated that the pre-model year report must be submitted during the month of December. The Alliance pointed out that if EPA wanted GHG compliance plan information before the certification of any test groups, the regulatory language would need to be corrected.

EPA understands that a manufacturer's plan may change over the course of a model year and that compliance information manufacturers present prior to the beginning of a new model year may not represent their final compliance outcome. Rather, EPA views the compliance plan as a manufacturer's good-faith projection of strategy for achieving compliance with the greenhouse gas standard. EPA understands that compliance with the GHG program will be determined at the end of the model year after all appropriate credits have been taken into consideration.

As stated earlier, a requirement to include GHG compliance information in the new model year compliance preview meetings is consistent with long standing EPA policy. The information will provide EPA with an early overview of the manufacturer's GHG compliance plan and allow EPA to make an early assessment as to possible issues, questions, or concerns with the program in order to expedite the certification process and help manufacturers better understand overall

compliance provisions of the GHG program. Therefore, EPA is finalizing revisions to 40 CFR 600.514-12 which will require manufacturers to submit a compliance plan to EPA prior to the beginning of the model year and prior to the certification of any test group. The compliance plan must, at a minimum, include a manufacturer's projected footprint profile, projected total and model-level production volumes, projected fleet average and model-level CO_2 emission values, projected fleet average CO_2 standards and projected fleet average CO_2 credit status. In addition, EPA will expect the compliance plan to explain the various credit, transfer and trading options that will be used to comply with the standard, including the amount of credit the manufacturer intends to generate for air conditioning leakage, air conditioning efficiency, off-cycle technology, and various early credit programs. The compliance plan should also indicate how and when any deficits will be paid off through accrual of future credits.

EPA has also corrected the inconsistency between the proposed preamble and regulatory language with respect to when the compliance report must be submitted and what level of information detail it must contain. EPA is finalizing revisions to 40 CFR 600.514-12 which require the compliance plan to be submitted to EPA prior to the beginning of the model year and prior to the certification of any test group.

5.10.3. Useful Life Compliance and In-use Compliance Standard

Organization: Ford Motor Company
Honda Motor Company
Ferrari S.p.a
Association of International Automobile Manufacturers (AIAM)
Chrysler Group LLC (Chrysler)
Alliance of Automobile Manufacturers (Alliance)
Mitsubishi Motors R & D of America (MRDA)
Hyundai Motor Company
Volkswagen Group of America (Volkswagen)
Toyota Motor North America
NGVAmerica
State of New Jersey
University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy
People's Republic of China
Chew, Yuli

Comment:

Ford Motor Company:

The benefit of expanding the existing criteria pollutant emissions durability requirements to include these greenhouse gases is negligible, relative to other potential measures that could have a much more significant impact on actual in-use greenhouse gas emissions. Such measures would go beyond the vehicle's design. For example, significant additional greenhouse gas emissions reductions could be achieved by reducing the carbon intensity of the nation's overall

fuel supply (through the introduction of alternative, low-carbon fuels). In addition, further reductions could also be achieved through more efficient transportation control measures designed to manage increased travel demand. These could include congestion mitigation initiatives, eco-driving education and awareness programs, and other incentives to encourage consumers to drive more efficiently. [OAR-2009-0472-7082.1, Cover letter p. 2]

Durability Deterioration Requirements

The existing durability procedures are designed around the expectation that criteria pollutants will increase over time because of decreasing effectiveness of the catalytic converters and other key emission control devices. However, the function of a catalyst is to convert criteria pollutants to water vapor and CO2. To the extent that catalyst function does degrade, CO2 emissions will decrease with reduced control capability. Since there are no after-treatment devices currently able to control CO2 emissions, performance degradation of such devices over time is a non-issue. [OAR-2009-0472-7082.1, p. 11]

Greenhouse Gas Compliance Program

In-use GHG Measurement and Reporting Requirements

Ford believes that in-use GHG measurement and reporting requirements would be an unnecessary waste of resources for a CO2 program. For criteria pollutants, in-use testing is used to identify in-use problems, validate the accuracy of the certification program, verify the manufacturers' durability processes, and support emissions modeling efforts. Criteria pollutant emissions can increase over the useful life of a vehicle due to a loss in effectiveness of after-treatment systems; therefore in-use testing is a critical component of a comprehensive compliance program for such pollutants. However, as acknowledged by EPA, unlike traditional criteria pollutants, vehicle CO2 emission levels depend primarily on fundamental vehicle design characteristics and do not change significantly over time (see Section 111.E.4 of the preamble). In-use CO2 results will be substantially similar to the results observed during model-level certification testing. Therefore in-use GHG requirements would increase testing costs without providing additional environmental or public health benefits. For that reason. we propose that in-use GHG measurement and reporting requirements for manufacturers be dropped.

CO2 emissions are inversely correlated with the fuel economy of the vehicle. To evaluate the in-use CO2 emissions performance of our vehicles, Ford conducted an analysis of City FE results from customer vehicles procured and tested in accordance with IUVP requirements. These results are presented in Chart 1 above. [See OAR-2009-0472-7082.1, p. 15 for Chart 1]

The data evaluated consisted of City FE test results from over 850,2001 thru 2006 model year (MY) in-use customer vehicles. The results from each vehicle were compared to the most applicable City CAFE program value based on its configuration (i.e., equivalent test weight, transmission type, chassis type, etc.). The percent difference of the IUVP and CAFE City test results were calculated and plotted on the above histogram shown in Chart 1. Over 75% (i.e., 647/857) of the IUVP vehicles sampled achieved City FE test results equal to or better than their associated City CAFE test results. In light of data showing that emissions of the constituent

typically improve over time, a requirement for an in-use testing program aimed at CO2 would force the expenditure of resources for no real purpose.

Certainly, the CAA does not require in-use testing covering all vehicles and all pollutants. Section 206(b) authorizes EPA to conduct such tests, but leaves it to EPA's discretion to decide what specific testing is necessary and appropriate. However, it is clear under the Act that the purpose of any such testing must be 'to determine whether new motor vehicles...do in fact conform with the regulations with respect to which the certificate of conformity was issued... ' In other words, any testing that EPA does require should be justifiable on the grounds that it is has a reasonable chance of detecting non-conformities in the vehicles as certified by the manufacturer.

In-use testing for CO2 emissions is not a reasonable way of looking for non-conformities in vehicles as certified. First, as noted above, the data shows that for the vast majority of vehicles CO2 emissions actually improve in-use. Therefore, there should not be any significant concern that CO2 emissions from vehicles as a whole will degrade as the vehicle population ages. Second, to the extent that the CO2 emissions of individual vehicles may increase over time, the cause of this phenomenon is likely to either be 1) unknown, or 2) attributable to factors outside of the manufacturer's control. Such factors could include failure of the customer to maintain the vehicle properly, alterations to the vehicle by the customer, or accidents/abuses in the vehicle's history. Unlike criteria pollutants, where a failure to meet emissions standards can usually be traced to one or two specific possible causes, there are a whole host of potential causes of degraded fuel economy and increased GHG emissions. To the extent that a recall was ever conducted for failure to meet in-use testing criteria for CO2, it is not clear that there would be any 'defect' for a manufacturer to remedy, or any specific action the manufacturer could take to fix the issue. For these reasons, Ford recommends that EPA drop its proposed in-use testing program for CO2.

If, in spite of the comments above, EPA does require an in-use compliance program, Ford believes that three elements must be put in place to minimize the burden of the program. First, Ford supports the idea of an EPA assigned deterioration factor of zero (additive) or one (multiplicative) for CO2 useful life compliance but requests that manufacturers also be allowed to conduct whole-vehicle mileage accumulation to generate improvement factors for CO2 useful life compliance.

As noted above, historical durability data confirms that CO2 control is stable and on average improves slightly with vehicle use or over time. In light of the above data, EPA should allow for the use of an improvement factor (i.e., negative deterioration factor) for CO2 useful life compliance. For example, the data shown in Table 1 above [See OAR-2009-0472-7082.1, p. 16 for Table 1] indicates that rather than the deterioration factors suggested by the EPA; improvement factors of as much as 2.0% could be warranted. When appropriate, manufacturers should be allowed to apply an improvement factor to their CO2 certification test data to reflect that CO2 performance improves over time.

Second, if EPA requires in-use testing, Ford also supports the creation of a separate in-use CO2 standard with an adjustment factor of at least 10%. To address issues of variability, separate in-use standards must provide manufacturers with an appropriate compliance margin. In-use FE

differences of 20% were observed in an evaluation of 2001 through 2006 MY fuel economy (FE) data from the IUVP program (see Chart 1). Of the 857 test points evaluated, over 99% of the results would comply with in-use standards set with a 10% adjustment factor.

Third, If EPA requires in-use CO2 testing, the HFET CO2 emissions result measured during CAFE testing should be used in combination with the in-use Federal Test Procedure (FTP) CO2 emissions measured over the FTP cycle. To be consistent with CAFE, EPA proposes to combine the CO2 emission results from the FTP and HFET test cycles using the same calculation used to determine FE for CAFE purposes. Since the proposed CO2 standard would reflect a composite value of FTP and HFET results, EPA asserts that it is necessary to include the HFET emissions tests in IUVP to enable EPA to compare an in-use CO2 level with a vehicle's in-use standard. However, since CO2 emissions have already been demonstrated to be stable throughout the useful life of vehicles, in-use HFET testing provides no benefit and unnecessarily burdens manufacturers.

[OAR-2009-0472-7082.1, pp. 14-17]

N2O and CH4

Ford believes that N2O and CH4 reporting requirements are most appropriately handled through attestation or an annual unregulated emissions report, rather than integrating it as part of all testing and requiring facility upgrades as well as the increased on-going per test costs. EPA acknowledges that N2O and CH4 emission levels from modern vehicle designs are extremely low and represent only about 1% of total light-duty vehicle GHG emissions (see Section III.3.a). It is anticipated that current vehicle designs will meet the proposed N2O and CH4 requirements. For that reason, and to avoid the additional cost of upgrading in-use testing facilities to enable N2O and CH4 measurement and reporting, we believe in-use N2O and CH4 compliance should be handled through an attestation or an annual unregulated emissions report. [OAR-2009-0472-7082.1, p. 17]

In-Use Testing GHG Exclusions

Ford supports EPA's recommendation for the exclusion of CO2 , N2O, and CH4 from the In-Use Compliance Program (IUCP) thresholds. The IUCP is recall type testing used to identify in-use compliance concerns. For traditional criteria pollutants, IUCP testing provides an opportunity to remedy in-use compliance concerns. Unlike traditional criteria pollutants, CO2 performance is a function of vehicle design and can not be remedied in the field with the addition of emissions control devices. For that reason, CO2 performance should be excluded from IUCP thresholds. [OAR-2009-0472-7082.1, p. 17]

Honda Motor Company:

EPA proposes setting a compliance factor threshold for IUVP testing. And yet, no enforcement is planned for IUVP vehicles exceeding the threshold. In discussions with staff, for example, we were unable to determine the practical plan for addressing IUVP cases where the tested vehicle exceeds the threshold. How many test cases are required to determine that the threshold for the

subconfiguration (or vehicle configuration or base model or model type) has been exceeded? If the margin for a specific vehicle is 22 grams (e.g. a vehicle with an original value of 220 grams and a margin of 10%) and the IUVP test exceeds the original value by 23 grams, is the failure equivalent to 1 gram or 23 grams? In light of a threshold and no enforcement plan, Honda suggests that the threshold be eliminated, even while requiring the data from the IUVP. After sufficient experience with the data, EPA can make a more informed decision regarding appropriate thresholds and enforcement actions related to the IUVP. Of course, none of this prevents EPA from asking OEMs for additional information cases where IUVP data interests EPA. [NHTSA-2009-0059-0095.1, p.7]

If EPA rejects the aforementioned proposal to eliminate the IUVP threshold, Honda would like to address EPA's proposal for a "10% adjustment factor to provide some margin for production and test-to-test variability that could result in differences between initial model-level emission results used in calculating the fleet average and any subsequent in-use testing." Honda notes that model-type emissions are the result of a process that accumulates subconfiguration, configuration and base-level data into a single model-type profile. There can be considerable variation within a single model type, yet EPA's proposal only allows for variation for production and test-to-test. [NHTSA-2009-0059-0095.1, p.7]

When OEMs submit data to EPA, the model-type profile is constructed from numerous subconfigurations, both with and without emissions data (see Attachment 2). Honda proposes that where data exists at the subconfiguration level, OEMs in-use testing should be based upon 10% variability from the subconfiguration data. In the cases where subconfiguration data does not exist, EPA needs to allow for additional variability. The current CAFE rules allow for considerable variability between Model-Type MPG and subconfigurations. Although Honda does not have a specific recommendation, Honda encourages EPA to set appropriate, additional variability from the Model-Type emissions profile to the un-tested subconfiguration level. [NHTSA-2009-0059-0095.1, pp.7-8] [[See NHTSA-2009-0059-0095.1, p.15 for Attachment 2]]

Honda also proposes a slight change to the 10% variability proposed by EPA. If variability is based strictly as a percentage of the certification level, in absolute terms, the dirtiest cars will have the greatest margin, while the cleanest cars will have the least margin. Honda suggests that the variability margin be partially based on the certification level of the car and partially based on the projected fleet-wide emissions compliance levels (TABLE I.D.2–4). In the example shown in Attachment 3, Honda recommends a hybrid approach to setting the in use variability. Rather than the 10% of the certified level, Honda proposes using 5% of the projected fleet average for the year and 5% of the tested value. The result of this approach is to slightly reduce the margin for the dirtiest vehicles and provide a slightly larger margin for the cleaner, more challenging vehicles. [NHTSA-2009-0059-0095.1, p.8] [[See NHTSA-2009-0059-0095.1, p.16 for Attachment 3]]

Ferrari S.p.a:

EPA proposes in-use CO2 standards that would apply throughout a vehicle's useful life, with the standard determined by adding a 10 percent adjustment factor to the model-level emission results. This proposal is made notwithstanding EPA's statement that there is no current basis for

believing that the emissions of carbon dioxide or fuel economy deteriorate in-use. [OAR-2009-0472-7214.1, p.4]

Finally, we note a discrepancy between the fleet-based CO2 standards and a single model or version in-use compliance standards. As for methane and nitrous oxide standards, the in-use test program proposed by EPA is intended to address a theoretical problem. If EPA is concerned about possible deterioration of vehicle characteristics and devices that could affect the in-use CO2 emissions (contrary to present data and evaluation by EPA), we suggest a research program to demonstrate the need to monitor these emissions for the vehicle useful life. Then, the in-use higher standards may be defined. Docket No. EPA-HQ-OAR-2009-0472 and NHTSA-2009-0059 – NPRM GHG-CAFE MYs 2012-16 – Ferrari Comments. Accordingly, we deem necessary not to adopt in-use standards. EPA proposes a zero (additive) or one (multiplicative) deterioration factor for carbon dioxide, because it is recognized that vehicle carbon dioxide emissions generally do not deteriorate in-use. But EPA also states that such deterioration factor could be modified later. This is an important change that should be addressed carefully, because it could further increase the stringency of the CO2 standards. Moreover, it will affect the harmonization with CAFE regulation. [OAR-2009-0472-7214.1, pp.4-5]

Association of International Automobile Manufacturers (AIAM):

EPA also proposes in-use carbon dioxide standards that would apply throughout a vehicle's useful life, with the standard determined by adding a 10 percent adjustment factor to the model level emission results. This proposal is made notwithstanding EPA's statement that there is no current basis for believing that the emissions of carbon dioxide or fuel economy deteriorate in use. [OAR-2009-0472-7123.1, p.6]

Data from EPA's current in-use compliance test program indicate that CO2 emissions from current technology vehicles increase very little with age and in some cases may actually improve slightly. The stable CO2 levels are expected because unlike criteria pollutants, CO2 emissions in current technology vehicles are not controlled by after treatment systems that may fail with age. Rather, vehicle CO2 emission levels depend primarily on fundamental vehicle design characteristics that do not change over time. Therefore, vehicles designed for a given CO2 emissions level would be expected to sustain the same emissions profile over their full useful life. *See* preamble at 49562. [OAR-2009-0472-7123.1, p.6]

Under EPA's in-use verification program (IUVP), manufacturers would be required to add a highway fuel economy test (HFET) for each in-use test vehicle. *See* preamble at 49563, proposed section 86.1845-04. [OAR-2009-0472-7123.1, p.6]

There is no requirement in the Clean Air Act that mandates in-use testing. Although the Clean Air Act provides that emissions standards are to be applicable for the "useful life" of the vehicle, no particular level of testing to assure compliance over the useful life is mandated by the statute, and EPA has the discretion to craft a compliance testing program that does not include in-use testing. *See* 42 USC 7521(a)(1). [OAR-2009-0472-7123.1, pp.6-7]

In addition to the lack of any demonstrated need for an in-use test program, there are other practical problems as well. The model type emission level that serves as the proposed basis for the in-use standard is an average value, not a test result across all the models in a particular test group. Not all vehicle configurations or subconfigurations in the test group are tested. If a vehicle selected for in-use testing were from a higher emitting configuration due to its basic characteristics, the test vehicle would be expected to have higher emissions than the model type average. In addition, certification vehicles must represent mean production tolerances, so by definition half of production vehicles would be expected to have higher emissions than the certification vehicle. EPA's proposed approach only deals with the test-to-test variability and does not address these other problems. [OAR-2009-0472-7123.1, p.7]

A fundamental complication associated with an in-use standard for carbon dioxide is that, unlike the current program for criteria pollutants, there is no opportunity for a manufacturer to "over comply" by creating additional compliance headroom to reduce the impact of the previously noted problems. Under the current program for criteria pollutants, manufacturers usually certify to emissions levels well below applicable standards to provide for the possibility of production variability, among other things.

As with the methane and nitrous oxide standards, the in-use test program proposed by EPA is intended to address a theoretical, speculative problem. We do not suggest that it is inappropriate for EPA to be concerned about in-use deterioration of carbon dioxide emissions, but requiring significant amounts of additional testing by manufacturers at this stage is not justified. A more appropriate approach would be a research program to evaluate whether there is a deterioration problem, particularly with new technology. This program could be similar to AIAM's recommendation above with respect to methane and nitrous oxide standards. [OAR-2009-0472-7123.1, p.7]

If EPA decides to pursue an in-use testing program for compliance purposes, notwithstanding the current lack of an indication of an in-use deterioration problem, it should at least adopt a different approach. One improvement would be to apply the 10 percent factor to the test result of the most similar configuration that was tested for certification, rather than the model type average. This would make the in-use standard more representative of the test vehicle. [OAR-2009-0472-7123.1, p.7]

The current EPA regulations governing the in-use vehicle program (IUVP) provide for EPA approval of a reduction in test burden, based on a manufacturer's demonstration of consistent compliance with in-use standards. *See* section 86.1852-01. Despite recent discussions with auto manufacturers on reducing IUVP test burden, such reductions have not yet materialized, and EPA is now proposing increasing IUVP test burdens by adding the highway test. AIAM requests the Agency consider the overall IUVP test burden on manufacturers and continue to work with manufacturers to identify ways to reduce overall IUVP test burden while satisfying the need for additional testing for greenhouse gas purposes. [OAR-2009-0472-7123.1, pp.7-8]

EPA proposes a zero (additive) or one (multiplicative) deterioration factor for carbon dioxide, because it is recognized that vehicle carbon dioxide emissions generally do not deteriorate in use. EPA also raises the possibility of changes in deterioration factors which could be ordered by

Agency staff in compliance plan discussions with the manufacturer (*see* preamble at 49562). A change in the deterioration factor would be equivalent to a change in the stringency of the standard. A change of this sort would eliminate the harmonization achieved between CAFE and greenhouse gas standards. Because of the significant consequences of a change in a deterioration factor, such a change should only be implemented after notice and opportunity for comment. AIAM agrees with EPA that a change in a deterioration factor would require adequate lead-time to enable the manufacturer to comply. *See* proposed section 86.1823-08(m)(1)(ii). [OAR-2009-0472-7123.1, p.8]

In the case of a manufacturer that is in clear compliance jeopardy, a pre-model year compliance meeting to discuss future compliance assurance may be appropriate on an ad-hoc basis. However, we question the value of preparing regulatory compliance plans in advance as a general matter. Such plans are likely to change, since they are subject to the vicissitudes of the market. Developing and evaluating these plans will take time and effort, but by the time the plans are evaluated by EPA, the manufacturer's compliance strategy may well have changed. [OAR-2009-0472-7123.1, p.16]

The Agency should not attempt to take any enforcement action based on an asserted inadequacy of a plan. Compliance should be determined only after the end of a model year and the subsequent credit earning period. This characterization of the pre-model year plan should be in the final rule. [OAR-2009-0472-7123.1, p.16]

Chrysler Group LLC (Chrysler):

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, p. 49]]

In addition, the proposed rule would apply in-use testing requirements to these standards. We would propose that EPA gather data on specific test plans and we're willing to work with EPA on those matters.

Alliance of Automobile Manufacturers (Alliance):

In addition to CO2, CREE includes the following constituents depending on the type of fuel that is used; total hydrocarbons (HC), carbon monoxide (CO), methane (CH4), nonmethane hydrocarbons (NMHC), methanol (CH3OH), formaldehyde (HCHO), ethanol (C2H5OH) and acetaldehyde (C2H4O). The proposed regulations require that deteriorated values are used in the calculation of CREE. While some of these constituents currently have useful life standards and already have DFs, some do not. Therefore, manufacturers may be required to rerun all forms of durability vehicle testing in order to establish DFs for these constituents.

Model Type CREE Standard (Proposed regulations in 40 C.F.R. 86.1865-12)

EPA has proposed that there be a model type CREE standard set equal to the model type CREE value that is obtained during the fleet-average CREE calculation. [OAR-2009-0472-6952.1, p.48]

EPA Response to Comments

The establishment of a model type CREE standard has some inherent flaws. First, the model-type CREE value is an average of test data. Since it is an average, some of the official data that went into the calculation of the standard will automatically fail the standard. Second, these standards will not be established until all testing is completed after the end of a model year. This means a manufacturer could be producing "failing" data during the model year and would not know this until after the model year fleet average calculations have been completed. Depending on the interpretation of the regulations, a manufacturer could be deemed to have produced uncertified configurations. [OAR-2009-0472-6952.1, p.48]

Recommendation:

Fleet-average CO2 standards are sufficient for manufacturers to prove compliance to the GHG emission regulations and there is no need for model type CREE standards. Additionally, as noted above, CREE is not as useful a metric as is CO2, which should be the only measured GHG emission value. [OAR-2009-0472-6952.1, p.48]

In-Use Requirements (Proposed regulations in 40 C.F.R. 86.1818-12, 86.1845-04 and 86.1846-01)

EPA has proposed that the model type CREE standard be multiplied by 1.1 to establish an in-use model type CREE standard. In addition, since the proposed model type CREE standard is a combination of FTP and HFET tests, in-use highway testing would also be required to be able to compare in-use data to the model type CREE standard. [OAR-2009-0472-6952.1, p.49]

Recommendation:

It is premature to establish in-use CO2 standards. Unless and until one CO2 standard can be established for a particular category of vehicles, the concept of an in-use CO2 standard will be an unachievable goal. The concept of establishing fleet-average CO2 standards by footprint and allowing vehicles with a particular footprint to exceed the footprint standard as long as they are offset by other vehicles that achieve better than their footprint standard is in essence an admission that the establishment of a CO2 "emission standard" for a particular category of vehicles is a difficult if not impossible task. [OAR-2009-0472-6952.1, p.49]

The establishment of fleet-average CO2 emission standards and the associated procedures for demonstrating certification compliance to those standards is a sufficient method for establishing in-use compliance to the CO2 emission standard. Additional in-use testing will provide little benefit and does not warrant the additional cost and burden. There is no need for additional in-use testing (either by manufacturers or by EPA) at this time. [OAR-2009-0472-6952.1, p.49]

The need for in-use data to capture any possible deterioration in CO2 levels from advanced technology vehicles (hybrids, PHEVs) is not technically supportable at this time. EPA can better achieve its goal of increased knowledge about deterioration of CO2 on advanced technology vehicles through a focused research program to study a relatively small sample of vehicles rather than through comprehensive reporting for all vehicles. [OAR-2009-0472-6952.1, p.49]

Finally, even though EPA is not going to require in-use compliance programs based on N2O and CH4 results, the concept of N2O and CH4 standards with no certification margin is inconsistent for IUVP since IUVP serves as a surveillance program and not a certification program. (Note that this issue could be avoided if EPA accepts the recommendation to drop the N2O and CH4 standards as stated previously.) [OAR-2009-0472-6952.1, p.49]

The Alliance views in-use reporting as unnecessary because CO2 emissions do not significantly change over a vehicle's lifetime. CO2 emissions are unlike traditional criteria pollutants, which may have a propensity to increase over time, because CO2 is not controlled through specific emission control devices or after-treatment systems which may be susceptible to degradation over time. This phenomenon is well understood as the automotive industry has provided data to EPA during previous GHG discussions and EPA has confirmed that their in-use compliance test program data also shows that CO2 emissions has not increased with age. [OAR-2009-0472-6952.1, p.51]

In-Use Testing and Remedies

EPA must also recognize the fundamental differences between compliance with currently regulated emissions and GHG emissions in other portions of its proposed enforcement program. Congress made a decision in 1975 when it adopted EPCA to create a program to regulate fuel economy outside the Clean Air Act, and to assign responsibility for that program to NHTSA, not EPA. EPCA did not include an in-use performance requirement for a number of reasons, including the fact that the fuel economy performance of vehicles in good repair does not deteriorate with age or mileage. In the GHG reporting rulemaking, the Alliance provided test data confirming that CO2 emissions remain stable from such vehicles. [OAR-2009-0472-6952.1, pp.56-57]

EPA proposes, however, to treat GHG standards -- which are largely dependent on a manufacturer's application of fuel economy technologies to reduce carbon dioxide emissions -- on the same footing as standards for other regulated emissions. It is critical to recognize that under the Clean Air Act, EPA's in-use recall enforcement authority is limited to situations in which a nonconformity determination is based on the performance of "properly maintained and used" vehicles, and can be remedied by repair. 42 U.S.C. § 7541(c)(1); see Center for Auto Safety v. Ruckelshaus, 747 F.2d 1 (D.C. Cir. 1984) (EPA lacks authority to require manufacturers to remedy a nonconformity by means other than repair). Vehicles that have been properly maintained and used will exhibit the stable to slightly-improved CO2 control levels confirmed in the data that the Alliance submitted in the GHG reporting rulemaking. In that respect, in-use testing for compliance with the GHG standards is unnecessary and cannot as a practical matter support a recall-and-repair order. Such testing is certainly not mandated by the Clean Air Act. And, in addition to being impractical and unproductive, the presumptive goal of such testing (to obtain a recall, when the test data warrant) would be inconsistent with EPCA -- and inconsistency with EPCA must be avoided in all parts of EPA's program. See Massachusetts, supra. [OAR-2009-0472-6952.1, p.57]

In addition, there are several implementation concerns that need to be considered and which are outlined in Section VII as it applies to GHG emissions. [OAR-2009-0472-6952.1, p.57]

Mitsubishi Motors R & D of America (MRDA):

There are significant challenges in the increased stringency between the 2011 and 2012 model years. The rate of this increase will likely result in excessive costs and burdens as many vehicles are quickly reconfigured to comply with these new standards. [OAR-2009-0472-7125.1, p.1]

Hyundai Motor Company:

EPA proposes an in-use standard at ten percent above the model-level CO2 certification data. As noted in EPA's preamble, there is no headroom built into the CO2 certification levels (74 FR 49564) so EPA will provide a ten percent margin above the certified vehicle results to allow for test-to-test variability and/or production variability. EPA notes that the EPA's fuel economy labeling and CAFE confirmatory test results were evaluated for test-to-test variability and EPA's current in-use compliance program for age-related CO2 impacts (74 FR 49562, 49564). It is not clear to us how these assessments were conducted , because the data is not available in the draft Regulatory Impact Analysis. We believe that EPA should include the analysis for the ten percent increase for in-use standards in the Regulatory Impact Analysis.

We also recommend that EPA analyze the any voluntarily submitted-C02 data from FTP testing for the In-Use Verification Program (IUVP) and compare that data with CAFE model-level FTP test data. This analysis would provide EPA with additional information on the variation between certification and in-use FTP test data and validation of the ten percent value.

However, there is a fundamental issue with using model-level CO2 data for the in-use standards. Model-level data is the result of sales-weighted average emission and fuel economy test data for multiple vehicle configurations and sub-configurations. As a result, the model-level data cannot be directly compared to the CO2 performance of a particular in-use vehicle. EPA should revisit the appropriate test data for evaluating in-use vehicle CO2 as compared to the certification value. [OAR-2009-0472-7231.1, p.6]

Volkswagen Group of America (Volkswagen)

Volkswagen also has concerns regarding in-use test burden, compliance issues and certification issues associated with this proposed notice. We believe in-use testing for GHG compliance is not necessary for conventional vehicles, where we believe there is ample evidence that CO2 GHG emissions do not degrade over time. If EPA remains concerned that there are future vehicles such as hybrids that may have CP2 GHG performance that deteriorates over time, Volkswagen believes a test program between the industry and the agencies is a more appropriate way to understand the potential problems or issues related to situations where a vehicle's GHG emissions would increase in-use. Volkswagen pledges support for any program that would study in-use GHG emissions. [OAR-2009-0472-7210.1, p.7]

Toyota Motor North America

In-Use Standards

For each model type, EPA proposed in-use CO2 standards set at a level 10% higher than the model-specific levels used in calculating the fleet average. EPA proposes the 10% adjustment factor to provide some margin for production and test-to-test variability that could result in differences between initial model level emission results used in calculating the fleet average and any subsequent in-use testing. The in-use standard would apply for the same useful life period as in Tier 2 and, similarly, EPA proposes to allow several options for predicting in-use deterioration, including full vehicle testing, bench aging, and the application of a deterioration factor based on engineering judgment. [OAR-2009-0472-7291, pp.28-29]

Toyota is concerned whether certification test data is representative of in-use results. Certification data may vary among the vehicles in the test group and variability is inherent among correlation with laboratories. This must be taken into consideration when comparing certification data and in-use data. For CO2, there would be no margin for development because the value established in certification would be directly applied to the in-use standard. The in-use test result provided under IUVP will be inconsistent with the certification vehicle because the certification vehicle specifications will likely differ from the actual configuration of the IUVP selection vehicle. Thus, Toyota believes that it is premature to introduce a CO2 in use standard at this time. Toyota suggests that EPA allow time to generate sufficient in-use CO2 data, which would occur under the IUVP program, before making judgments on an in-use standard for CO2. [OAR-2009-0472-7291, p.29]

In addition, Toyota is concerned with the lack of data to assess the compliance factor that EPA proposes in the regulation. Without adequate data, Toyota is concerned that assigning a 10% factor may lead to a margin that would compromise HEV and PHEV technology vehicles. Therefore, EPA should not establish an in-use standard or a compliance factor until sufficient in-use data has been collected through the In-Use Verification Program (IUVP) as discussed later in these comments. [OAR-2009-0472-7291, p.29]

Finally, it is not clear what remedial action a manufacturer would take in case of noncompliance with the in-use standard . Without a clearly malfunctioning or deteriorated part causing noncompliance, the technical options to improve the fuel economy (and thus lower CO2) of an in-use vehicle are unclear at best. Further, even in the scenario where an in-use noncompliance is found, the overall fleet average standard might still be achieved if other models have better in-use performance when compared to their certification levels. [OAR-2009-0472-7291, p.29]

Useful Life Testing (IUVP and IUCP)

EPA regulations under the CAA require a vehicle to comply with emission standards over its useful life and require manufacturers to conduct in-use testing as a condition of certification. Toyota would like to respond to specific aspects of the In-Use Verification Program (IUVP) and the In-Use Compliance Program (IUCP). [OAR-2009-0472-7291, p.30]

IUVP

Manufacturers must procure and test private vehicles and report the results to EPA under the auspices of the In-Use Verification Program (IUVP). Currently manufacturers test low mileage

and high mileage vehicles over the FTP and US06 cycles, provide evaporative emissions data, and on-board diagnostics information. EPA uses IUVP data to identify in-use problems, validate certification process, verify manufacturer's durability programs and support emission modeling efforts. EPA proposes that for IUVP testing, a manufacturer will provide emission data for CO2 and also for N20 and CH4. EPA also proposes that manufacturers perform the highway test cycle as part of IUVP. Since the proposed CO2 standard reflects a combined value of FTP and highway results, EPA's rationale for inclusion of the highway test is to enable EPA to compare an in-use CO2 level with a vehicle's in-use standard. [OAR-2009-0472-7291, p.30]

Toyota supports EPA's intent to include CO2 as part of the IUVP data as a necessary means to validate the certification process. Furthermore, Toyota accepts the additional requirement to conduct highway testing under IUVP in order to enable the necessary comparison of a vehicle's in use standard to the measured in-use CO2 level. However, Toyota does not agree with the need to include N2O as part of the IUVP measurement and reporting criteria. N2O is not a significant factor of transportation emissions. N2O is not currently measured and proven N2O emission measurement techniques and instrumentation equipment have not been established. To fill the need for emission inventory purposes, EPA should consider using default values or other analytical techniques that can provide robust GHG data representation in the interim. If EPA does move forward with N2O measurement and reporting, validation and lead time for facility upgrades must be addressed. [OAR-2009-0472-7291, pp.30-31]

IUCP

In-Use Confirmatory Program (IUCP) is a manufacturer conducted recall quality test program that is used by EPA for the basis of a recall order. To be subjected to an IUCP audit, a threshold of 1.30 times the certification standard and an additional requirement that at least 50% of the test vehicles for that test group fail for the same pollutant. Citing a lack of data with which to make a determination on appropriate thresholds, EPA proposes to exclude IUVP data for CO2, N2O, and CH4 emissions from IUCP thresholds. EPA requests comments on their proposal to exclude CO2, N2O, and CH4 from the IUCP threshold. EPA proposes to add CO2, N2O, and CH4 to the emissions measurements it collects during surveillance testing. And EPA proposes a separate rulemaking to establish IUCP CO2, N2O, and CH4 threshold criteria when more data form EPA's internal surveillance program has been obtained. [OAR-2009-0472-7291, p.31]

Toyota agrees with EPA's proposal to exclude CO2, N2O, and CH4 from the IUCP program threshold criteria. However, rather than rely on collecting data from EPA's internal surveillance program in order to assess this threshold issue in the future, EPA should consider a joint test program with industry as a cost effective means to learn more about these emissions and respective measurement techniques. [OAR-2009-0472-7291, p.31]

NGVAmerica

We also urge EPA to provide in the final rule that manufacturers of NGVs may continue to use existing protocols allowed for aging catalysts with respect to criteria pollutants when demonstrating useful life emissions of methane. As proposed, it appears that NGV

manufacturers would have to develop new protocols. Further, we submit that any changes that EPA may require to catalyst aging protocols for determining CH4 useful life emissions would result in a prohibitive cost increase. Therefore, we request that currently used catalyst aging protocols be considered acceptable for measuring all useful life tailpipe emissions, including CH4 and N2O. [OAR-2009-0472-11310, p. 3]

State of New Jersey:

The Department supports the USEPA's position that once sufficient data have been obtained, In-Use Confirmatory Program threshold criteria for CO2, N2O, and CH4, and also HFCs, should be included through a subsequent rulemaking.[OAR-2009-0472-7109.1, p.9]

University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy:

We recognize the EPA's efforts to determine real world fuel economy of vehicles before they enter the market. However, we recommend that the EPA further monitor vehicles after they have been released off the line to ensure they are *continuing* to perform within a reasonable margin of the CAFE and GHG standards. The Federal Register recognizes that 'testing requirements may continue post-certification.' We would like to see this suggestion applied across all vehicle categories. It would not be difficult to stipulate procedures for manufacturers to follow to assure continued vehicle performance. One possibility is adapting the 'In Use Vehicle Program' currently in place to help measure real world vehicle emissions and fuel efficiency. The addition of equipment that measures these factors could be added to all, or a select sample, of vehicles. Additionally, the technology for measuring in-use fuel economy and vehicle emissions currently exists and would be relatively inexpensive to implement. [OAR-2009-0472-7188.1, p. 9]

Testing conducted after vehicles have been driven under real world conditions provides critical feedback. If vehicles are not maintaining consumption levels after initial time of testing, then it is possible that implemented technologies may not be continuing to perform as they age. We urge the EPA and NHTSA to continue to monitor on-road performance over a vehicles' lifespan. The EPA could conduct this testing, but they may also require manufacturers to provide verification that the fuel efficiency and GHG emissions of their fleet of vehicles has not declined beyond an acceptable margin over time. If the burden of proof is on the manufacturers, they may have the option of performing testing themselves or employing a third party to conduct sufficient assessments of the manufacturers' in-use vehicles. Based on existing data, an expected decrease in performance over a given time span should be allowed. However if fleets fail to meet the expected performance levels over time, action should be taken by the EPA. For example, if on road monitoring determines that the efficiency of a vehicle declines more than 10 percent within its first 3 years of use, the manufacturers should be required to pay the same penalty that would have been incurred if the original fleet standards had not been met. [OAR-2009-0472-7188.1, p. 10]

Continued monitoring of vehicle performance also creates the ability to better determine if current testing procedures are accurate and adequate. If there is a trend in vehicles failing to reflect EPA estimated fuel economy under real world driving scenarios, this could suggest flaws in the testing methodology that should be rectified. The EPA should not only collect, but also

utilize the database generated by continual testing in order to develop a robust testing model based on real world data. For example, vehicle emissions and fuel economy ascertained by the above method after one year of on-road use should closely reflect figures determined by the EPA at the time of initial testing. [OAR-2009-0472-7188.1, p. 10]

[University of California, Santa Barbara, Bren Working Group on Vehicle Fuel Economy also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp.119-121]

People's Republic of China:

In order to reflect the principle of fairness and justice, we suggest that vehicles sampled by the United States for test should be affirmed on the vehicle state by the vehicle manufacturer, no matter in the pre-production authentication, in-use verification program (IUVP), in-use confirmatory test program (IUCP), or other experiment programs demonstrating the conformity of the vehicle. [OAR-2009-0472-11269, p.3]

Yuli Chew (private citizen)

I support EPA's position that once sufficient data have been obtained, In-Use Verification Program (IUVP) threshold criteria for CO2, N2O, CH4 and even HFC should be included in later rulemaking and forms part of the determination of in-use criteria pollutants when they are in their first and third year of service. [OAR-2009-0472-7042.1, p.5]

EPA Response:

In-Use Standards

EPA received comments from the Alliance, AIAM, Ferrari, Ford, Honda, Hyundai, Mitsubishi, Toyota and Volkswagen. Some comments recommended changes to EPA's proposed in-use standards. Many comments recommended that EPA should not adopt in-use standards and should instead conduct an in-use "research" test program. AIAM, for example, recommended that "A more appropriate approach would be a research program to evaluate whether there is a deterioration problem, particularly with new technology."

For Tier 2, the in-use standard and the standard used for fleet average calculation are the same. In-use compliance for an individual vehicle is determined by comparing the vehicle's in-use emission results with the emission standard levels or "bin" to which the vehicle is certified rather than to the Tier 2 fleet average standard for the manufacturer. This is because as part of a fleet average standard, individual vehicles can be certified to various emission standard levels, which could be higher or lower than the fleet average standard. Thus, it would be inappropriate to compare an individual vehicle to the fleet average, since that vehicle could have been certified to an emission level that is different than the fleet average level.

This will also be true for the CO_2 fleet average standard. Therefore, to ensure that an individual vehicle complies with the CO_2 standards in-use, it is necessary to compare the vehicle's in-use

CO_2 emission result with the appropriate model-level certification CO_2 level used in determining the manufacturer's fleet average result.

There is a fundamental difference between the CO_2 standards and Tier 2 standards. For Tier 2, the standard level used for the fleet average calculation is one of eight different emission levels, or "bins," whereas for the CO_2 fleet average standard, the standard level used for the fleet average calculation is the model-level certification CO_2 result. The Tier 2 fleet average standard is calculated using the "bin" emission level or standard, not the actual certification emission level of the certification test vehicle. So no matter how low a manufacturer's actual certification emission results are, the fleet average is still calculated based on the "bin" level rather than the lower certification result.[29] In contrast, the CO_2 fleet average standard will be calculated using the actual vehicle model-level CO_2 values from the certification test vehicles. With a specified certification emission standard, such as the Tier 2 "bins," manufacturers typically attempt to over-comply with the standard to give themselves some cushion for potentially higher in-use testing results due to emissions performance deterioration and/or variability that could result in higher emission levels during subsequent in-use testing. For our CO_2 standards, the emission level used to calculate the fleet average is the actual certification vehicle test result, thus manufacturers cannot over comply since the certification test vehicle result will always be the value used in determining the CO_2 fleet average. This is the method used for compliance with the CAFE fleet average, and EPA is using the same approach here to be consistent with the CAFE approach. If the manufacturer attempted to design the vehicle to achieve a lower CO_2 value, similar to Tier 2 for in-use purposes, the new lower CO_2 value would simply become the new value used for calculating the fleet average.

The CO_2 fleet average standard is based on the performance of pre-production technology that is representative of the point of production, and while there is expected to be limited if any deterioration in effectiveness for any vehicle during the useful life, the fleet average standard does not take into account the test to test variability or production variability that can affect in-use levels. Therefore, EPA believes that unlike Tier 2, it is necessary to have a different in-use standard for CO_2 to account for these variabilities. EPA proposed an in-use standard that was 10% higher than the appropriate model-level certification CO_2 level used in determining the manufacturer's fleet average result.

As described above, manufacturers typically design their vehicles to emit at emission levels considerably below the certification standards, for example to account for deterioration in the emissions control system, production variability, testing variability, and other factors. This intentional difference between the actual emission level and the emission standard is referred to as "certification margin," since it is typically the difference between the certification emission level and the emission standard. The certification margin can provide manufacturers with some protection from exceeding emission standards in-use, since the in-use standards are typically the levels used to calculate the fleet average. For Tier 2, the certification margin is the delta between the specific emission standard level, or "bin," to which the vehicle is certified, and the vehicle's certification emission level.

[29] In a similar fashion, the fleet average for heavy-duty engines is calculated using a Family Emission Level, determined by the manufacturer, which is different from the emission level of the test engine.

Since the level of the fleet average standard does not reflect this kind of variability, EPA believes it is appropriate to set an in-use standard that provides a reasonable cushion for in-use variability that is not accounted for in the test level used to determine compliance with the fleet average. EPA proposed a factor of 10% that would serve this function. The factor would only be applicable to CO_2 emissions, and would be applied to the model-level test results that would be used to establish the model-level in-use standard

EPA selected a value of 10% for the in-use standard based on a review of EPA's fuel economy labeling and CAFE confirmatory test results for the past several vehicle model years. The EPA data indicate that it is common for test variability to range between three to six percent and only on rare occasions to exceed 10%. EPA believes that a value of 10% should be sufficient to account for testing variability and any production variability that a manufacturer may encounter. EPA considered both higher and lower values. The Tier 2 fleet as a whole, for example, has a certification margin approaching 50%.[30] However, there are some fundamental differences between CO_2 emissions and other criteria pollutants in the magnitude of the pollutants. Tier 2 NMOG and NO_X emission standards are hundredths of a gram per mile (e.g., 0.07 g/mi NO_X & 0.09 g/mi NMOG), whereas the CO_2 standards are four orders of magnitude greater (e.g., 250 g/mi). Thus EPA does not believe it is appropriate to consider a value on the order of 50 percent. In addition, little deterioration in GHG emissions control is expected in-use. The adjustment factor addresses only one element of what is usually built into a compliance margin.

The intent of the separate in-use standard, based on a 10% compliance factor adjustment, is to provide a reasonable margin such that vehicles are not automatically deemed as exceeding standards simply because of normal variability in test results. EPA has some concerns, however, that this in-use compliance factor could be perceived as providing manufacturers with the ability to design their fleets to generate CO_2 emissions up to 10% higher than the actual values they use to certify and to calculate the year end fleet average value that determines compliance with the fleet average standard. This concern provides an additional rationale for requiring FTP and HFET IUVP data for CO_2 emissions to ensure that in-use values are not regularly 10% higher than the values used in the fleet average calculation. If in the course of reviewing a manufacturer's IUVP data it becomes apparent that a manufacturer's CO_2 results are consistently higher than the values used for calculation of the fleet average, EPA will discuss the matter with the manufacturer and consider possible resolutions such as changes to ensure that the emissions test data more accurately reflect the emissions level of vehicles at the time of production, increased EPA confirmatory testing, and other similar measures.

Commenters generally did not comment on whether 10% was the appropriate level for the adjustment factor. Honda did support use of the proposed 10% adjustment factor for the in-use standard. But Honda also recommended that the 10% adjustment factor be applied to subconfiguration data rather than the model-level data unless there was no subconfiguration data available. Honda also expressed some concern over the inequity a 10% value would provide between high- and low-emitting vehicles. They suggested that rather than using a straight 10% multiplicative adjustment factor applied to the model-level CO_2 value for all vehicles, it would

[30] See pages 39-41 of EPA's Vehicle and Engine Compliance Activities 2007 Progress Report (EPA-420-R-08-011) published in October, 2008. This document is available electronically at http://epa.gov/otaq/about/420r08011.pdf

be more equitable to take the sum of a 5% multiplicative factor applied to the model-level CO_2 value and a 5% factor applied to the manufacturer's fleet CO_2 target.

EPA understands that use of a multiplicative adjustment factor would result in a higher absolute in-use value for a vehicle that has higher CO_2 than for a vehicle with a lower CO_2. However, this difference is not relevant to the purpose of the adjustment factor, which is to provide some cushion for test and production variability. EPA does not believe the difference would be great enough to confer the higher-emitting vehicles with an unfair advantage with respect to emissions variability.

Given that the purpose of the in-use standard is to enable a fair comparison between certification and in-use emission levels, EPA agrees that it is appropriate to apply the 10% adjustment factor to actual emission test results rather than to model-type emission levels which are production weighted. Therefore, EPA is finalizing an in-use standard that applies a multiplicative 10% adjustment factor to the subconfiguration emissions values, if such are available. If no emissions data exist at the subconfiguration level the adjustment will be applied to the model-type value as originally proposed. If the in-use emission result for a vehicle exceeds the emissions level, as applicable, adjusted as just described by 10%, then the vehicle will have exceeded the in-use emission standard. The in-use standard will apply to all in-use compliance testing including IUVP, selective enforcement audits, and EPA's internal test program.

In-Use Testing Requirements (Including IUVP, IUCP, CH4 and N2O Measurements)

EPA received comments from the Alliance, AIAM, Chrysler, Ford, the Peoples Republic of China, Toyota and the University of California, Santa Barbara regarding manufacturer's in-use testing requirements. Most comments from automobile manufacturers recommended that in-use testing was not needed. Ford, for example, commented that "in-use GHG measurement and reporting requirements for manufacturers be dropped." Regarding EPA's proposed in-use requirement to perform highway tests, Ford commented that "in-use HFET testing provides no benefit and unnecessarily burdens manufacturers." Toyota, on the other hand, commented that "Toyota supports EPA's intent to include CO2 as part of the IUVP data as a necessary means to validate the certification process. Furthermore, Toyota accepts the additional requirement to conduct highway testing under IUVP in order to enable the necessary comparison of a vehicle's in-use standard to the measured in-use CO2 level." The University of California, Santa Barbara commented that "We urge the EPA and NHTSA to continue to monitor on-road performance over a vehicles' lifespan."

Sections 202 (a) (1) and 202 (d) of the CAA require a vehicle to comply with emission standards over its regulatory useful life and affords EPA broad authority for the implementation of this requirement. The response to noncompliance can range from adjusting a manufacturer's credit balance to the voluntary or mandatory recall of noncompliant vehicles. These potential remedies provide manufacturers with a strong incentive to design and build complying vehicles.

Currently, EPA regulations require manufacturers to conduct in-use testing as a condition of certification. Specifically, manufacturers must commit to later procure and test privately-owned vehicles that have been normally used and maintained. The vehicles are tested to determine the

in-use levels of criteria pollutants when they are in their first and fourth years of service. This testing is referred to as the In-Use Verification Program (IUVP) testing, which was first implemented as part of EPA's CAP 2000 certification program.[31] The emissions data collected from IUVP serve several purposes. IUVP results provide EPA with annual real-world in-use data representing the majority of certified vehicles. EPA uses IUVP data to identify in-use problems, validate the accuracy of the certification program, verify the manufacturer's durability processes, and support emission modeling efforts. Manufacturers are required to test low mileage and high mileage vehicles over the FTP and US06 test cycles. They are also required to provide evaporative emissions, onboard refueling vapory recovery (ORVR) emissions and on-board diagnostics (OBD) data.

Manufacturers are required to provide data for all regulated criteria pollutants. Some manufacturers have voluntarily submitted CO_2 data as part of IUVP. EPA proposed that manufacturers provide CO_2, N_2O, and CH_4 data as part of the IUVP. EPA also proposed that in order to adequately analyze and assess in-use CO_2 results, which are based on the combination of FTP and highway cycle test results, the highway fuel economy test would also need to be part of IUVP. The University of California, Santa Barbara expressed support for including N_2O and CH_4 emissions as part of the IUVP. Manufacturer comments were almost unanimously opposed to including any GHG standards as part of the IUVP. Specifically, industry commented that CO_2 emissions do not deteriorate over time and in some cases actually improve. Ford provided data for several 2004 through 2007 model year vehicles that indicate CO_2 emissions actually improved an average of 1.42% when vehicles were tested over 5,000 miles. Since CO_2 emissions do not deteriorate over time, manufacturers commented that including CO_2 emissions and the highway test cycle as part of the IUVP would provide no benefit and would unnecessarily burden manufacturers. Manufacturers also commented that N_2O and CH_4 emissions are very low and by EPA's own account only represent about 1% of total light-duty vehicle GHG emissions. They also expressed concern over the cost and burden of measuring N_2O for IUVP, since many manufacturers use contractor laboratories to assist in their IUVP testing and many of these facilities do not have the necessary equipment to measure N_2O. They stated that since it was unnecessary to include CO_2 emissions as part of IUVP and since N_2O and CH_4 were such small contributors to GHG emissions, it did not make sense to include N_2O and CH_4 as part of the IUVP either. They felt that N_2O and CH_4 could be more appropriately handled through attestation or an annual unregulated emissions report.

As discussed above, although EPA shares the view expressed in manufacturer comments that historical data demonstrate little CO_2 deterioration, in-use emissions can increase for a number of reasons other than deterioration over time. For example, production or design errors can result in increased GHG emissions. Components that aren't built as they were designed or vehicles inadvertently assembled improperly or with the wrong parts or with parts improperly designed can result in GHG emissions greater than those demonstrated to EPA during the certification process and used in calculating the manufacturers fleet average. The "stacking" of component design and production tolerances can also result in in-use emissions that are greater than those used in calculating a manufacturer's fleet average.

[31] 64 FR 23906, May 4, 1999.

EPA believes IUVP testing is also important to monitor in-use versus certification emission levels. Because the emphasis of the GHG program is on a manufacturer's fleet average standard, it is difficult for EPA to make an assessment as to whether manufacturer's vehicles are actually producing the GHG levels claimed in their fleet average without some in-use data for comparison. For example, EPA has expressed concern that with the in-use standard based on a 10% adjustment factor, there would be an incentive for manufacturers to develop their fleet average utilizing the full range of the 10% in-use standard. The only way for EPA to assess whether manufacturers are designing and producing vehicles that meet their respective fleet average standards is for EPA to be able to review in-use GHG emissions from the IUVP.

Finally, EPA does have some concern about potential CO_2 emissions deterioration in advanced technologies for which we currently have no in-use experience or data. Since the CAFE program has never had an in-use requirement and today's final regulations are the first ever GHG standards, there has been no need to focus on GHG emissions in use as there will be with the new GHG standards. Many of the advanced technologies that EPA expects manufacturers to use to meet the GHG standards have been introduced in production vehicles, but until now not for the purpose of controlling greenhouse gas emissions. For example, advanced dual-clutch or seven-speed automatic transmissions, and start-stop technologies have not been broadly tested in the field for their long-term CO_2 performance. In-use GHG performance information for vehicles using these technologies is needed for many reasons, including evaluation of whether allowing use of assigned deterioration factors for CO_2 in lieu of actual deterioration factors will continue to be appropriate.

Therefore, EPA is finalizing the requirement that all manufacturers must provide IUVP emission data for CO_2. EPA will also require manufacturers to perform the highway test cycle as part of IUVP. Since the CO_2 standard reflects a combined value of FTP and highway results, it is necessary to include the highway emission test in IUVP to enable EPA to compare an in-use CO_2 level with a vehicle's in-use standard. EPA understands that requiring manufacturers to also measure N_2O and CH_4 will be initially challenging, since many manufacturer facilities do not currently have the proper analytical equipment. To be consistent with timing of the N_2O and CH_4 emissions standards for this rule, N_2O and CH_4 will not be required for IUVP until the 2015 model year.

Another component of the CAP 2000 certification program is the In-Use Confirmatory Program (IUCP). This is a manufacturer-conducted recall quality in-use test program that can be used as the basis for EPA to order an emission recall. In order for vehicles tested in the IUVP to qualify for IUCP, there is a threshold of 1.30 times the certification emission standard and an additional requirement that at least 50% of the test vehicles for the test group fail for the same pollutant. EPA proposed to exclude IUVP data for CO_2, N_2O, and CH_4 emissions from the IUCP thresholds EPA felt that there was not sufficient data to determine if the existing IUCP thresholds were appropriate or even applicable to those emissions. The University of California, Santa Barbara disagreed with EPA's concerns and recommended that CO_2, N_2O, and CH_4 emissions all be subject to the IUVP threshold criteria. Manufacturers commented that since CO_2 performance is a function of vehicle design and cannot be remedied in the field with the addition or replacement of emissions control devices like traditional criteria pollutants, it would not be appropriate or necessary to include IUCP threshold criteria for GHG emissions.

EPA Response to Comments

EPA continues to believe that the IUCP is an important part of EPA's in-use compliance program and it will continue to be so for traditional criteria pollutants. For GHG emissions, EPA believes the IUCP will also be a valuable future tool for achieving compliance, but believes that there is insufficient data today to determine whether the current IUCP threshold criteria are appropriate for GHG emissions. Once EPA can gather more data from the IUVP program and from EPA's internal surveillance program described below, EPA will reassess the need to exclude IUCP thresholds, and if warranted, propose a separate rulemaking establishing IUCP threshold criteria which may include CO_2, N_2O, and CH_4 emissions. Therefore, for today's final action, EPA will exclude IUVP data for CO_2, N_2O, and CH_4 emissions from the IUCP thresholds.

Remedies for Noncompliance with In-Use Standards

EPA received significant comment from industry expressing concern with the in-use standard. The comments focused on concerns about manufacturer liability for in-use CO_2 performance and for the most part did not address the proposed 10% adjustment level or even the need for an adjustment to account for variability. Some comments suggested that an in-use standard is not necessary because in-use testing is not mandated in the CAA. Others stated that since there is no evidence that CO_2 emission levels increase over time, there is no need for an in-use standard. Finally, there was a general concern that failure to meet the in-use standard would result in recall liability and that recall can only be used in cases where it can be demonstrated that a "repair" can remedy the nonconformity.

The concern over recall liability in cases where there is no effective repair remedy has some legitimate basis. For example, EPA agrees there would be a concern if a number of vehicles for a particular model were to have in-use emissions that exceed the in-use standard, with no effective repair available to remedy the noncompliance. However, EPA does not anticipate a scenario involving exceedance of the in-use standard that would cause the Agency to pursue a mandatory recall unless there is a repairable cause of the exceedance. At the same time, failures to emission-related components, systems, software, and calibrations do occur that could result in a failure of the in-use CO_2 standard. For example, a defective oxygen sensor that could cause a vehicle to burn excessive fuel would result in higher CO_2 levels that could exceed the in-use standard. While it is likely that such a problem would also affect other emissions as well, there would still be a demonstratable problem that can be repaired and a recall may be valid. Therefore, EPA believes that a CO_2 in-use standard is statutorily required and can serve as a useful tool for determining compliance with the GHG program.

Deterioration Factors

In general, there was widespread support for the proposed use of an assigned DF of 1.0 multiplicative deterioration factor (or a zero additive deterioration factor) for CO2 emissions. Ford supported this concept, but also commented that EPA's durability process "should allow for the use of an improvement factor (i.e. negative deterioration factor) for CO2 useful life compliance." AIAM commented that any possible changes in deterioration factors in the compliance plan discussions with the manufacturer would be equivalent to a change in the

stringency of the standard" and "should only be implemented after notice and opportunity for comment" due to lead-time reasons.

EPA believes that the useful life period established for criteria pollutants under Tier 2 is also appropriate for CO_2. Data from EPA's current in-use compliance test program indicate that CO_2 emissions from current technology vehicles increase very little with age and in some cases may actually improve slightly. The stable CO_2 levels are expected because unlike criteria pollutants, CO_2 emissions in current technology vehicles are not controlled by after treatment systems that may fail with age. Rather, vehicle CO_2 emission levels depend primarily on fundamental vehicle design characteristics that do not change over time. Therefore, vehicles designed for a given CO_2 emissions level will be expected to sustain the same emissions profile over their full useful life.

As noted, sections 202 (a) 91) and 202 (d) of the CAA require emission standards to be applicable for the vehicle's full useful life. Under Tier 2 and other vehicle emission standard programs, EPA requires manufacturers to demonstrate at the time of certification that the new vehicles being certified will continue to meet emission standards throughout their useful life. EPA allows manufacturers several options for predicting in-use deterioration, including full vehicle testing, bench-aging specific components, and application of a deterioration factor based on data and/or engineering judgment.

In the specific case of CO_2, EPA does not currently anticipate notable deterioration and has therefore determined that an assigned deterioration factor be applied at the time of certification. At this time EPA will use an additive assigned deterioration factor of zero, or a multiplicative factor of one. EPA anticipates that the deterioration factor will be updated from time to time, as new data regarding emissions deterioration for CO_2 are obtained and analyzed. Additionally, EPA may consider technology-specific deterioration factors, should data indicate that certain CO_2 control technologies deteriorate differently than others.

In response to Ford's comments, EPA agrees with industry comments that there is little evidence to indicate that CO_2 emission levels from current-technology vehicles increase over time, however EPA also believes that the evidence is inconclusive at this time to indicate that CO_2 emission levels from current technology vehicles decrease over the full useful life of the vehicle. Thus, EPA also believes that data are inconclusive with respect to an "improved" deterioration effect of CO_2 emissions (integrated over the useful life of the vehicle). For this reason, EPA is not adopting durability requirements which would allow for an "improvement factor" (i.e. negative deterioration factor) or for an option to generate data leading to use of an improvement factor for CO_2 useful life compliance. Further, EPA is treating CO_2 consistently with the longstanding treatment of other emissions, in that the regulations require any deterioration factor that is determined to be less than 1 to be set equal to 1. EPA will, however, continue to work with manufacturers to collect and analyze data that could improve overall understanding of in-use CO_2 emissions.

In response to AIAM's comments, during compliance plan discussions prior to the beginning of the certification process, EPA will explore with each manufacturer any new technologies that could warrant use of a different deterioration factor. For any vehicle model determined likely to experience increases in CO_2 emissions over the vehicle's useful life, EPA continues to believe

that manufacturers should not be allowed to use the assigned deterioration factor but rather should be required to establish an appropriate deterioration factor. If such an instance were to occur, EPA would allow manufacturers to use, for example, the whole-vehicle mileage accumulation method currently offered in EPA's regulations.[32]

5.10.4. Credit Program Implementation

Organization: Ford Motor Company
Chew, Yuli (private citizen)

Comment:

Ford Motor Company:

Ford supports EPA and NHTSA's proposed approach to the GHG/CAFE credit structure. In some cases, clarifying language should be added to meet the goals of a harmonized program. [OAR-2009-0472-7082.1, p. 2]

Ford supports the proposed reporting requirements, provided that confidential business information is protected under existing laws and regulations. [OAR-2009-0472-7082.1, p. 2]

Advanced Technology Definitions

In general, Ford supports the definitions of advanced technology vehicles, but offers the following recommendations and clarifications. Ford recommends that the electric vehicle, fuel cell and plug-in hybrid definitions be modified as follows:

Electric vehicle means a motor vehicle that is powered solely by an electric motor drawing current from a rechargeable energy storage system, such as from storage batteries or other portable electrical energy storage devices, including hydrogen fuel cells, provided that:

(1) Recharge energy must be drawn from a source off the vehicle, such as residential electric service; and

(2) The vehicle must be certified to the emission standards of Bin #1 of Table S04-1 in paragraph (c)(6) of §86.1811.

(3) EVs can not have an onboard combustion/generator system as a means of providing electrical energy.

Fuel cell means an electrochemical cell that produces electricity via the non-combustion reaction of a consumable fuel, typically hydrogen.

[32] 40 CFR 86.1823-08

Plug-in hybrid electric vehicle (PHEV) means a hybrid electric vehicle that: (1) has the capability to charge the battery from an off-vehicle electric source, such that the off-vehicle source cannot be connected to the vehicle while the vehicle is in motion. It is possible to produce a PHEV with a very small battery, that would provide some increased FE but very limited range, and these vehicles should not be forced into a charge-sustaining calculation or test method due to a limited range.

Ford also recommends that the EPA provide the definition and method of determining the 'equivalent all-electric range'. The standard test for determining the equivalent all electric range could be based on the EPA UDDS cycle, under the test conditions specified in SAE J1711, or equivalent test method specified by EPA. Ford is willing to work with EPA and industry to develop an appropriate test methodology. [OAR-2009-0472-7082.1, pp. 23-24]

Chew, Yuli (private citizen):

I believe a credit lifespan of 5 years is appropriate. This Regulation should harmonize with CARB's Regulation of having a useful life of five years to avoid confusion and allows Intermediate Volume Manufacturers to orderly place their strategies in the transition. If this is proposed, however, I believe that the usefulness of the credits from trucks should be curtailed, with 20% reduction annually or more in their ability to balance out the deficit in the cars. [OAR-2009-0472-7042.1, p.3]

EPA Response:

Advanced Technology Definitions

EPA proposed specific definitions for the vehicle technologies eligible for these provisions. One manufacturer suggested the following changes in their comments:

- Insert an additional criterion for electric vehicles that specifically states that an electric vehicle may not have an onboard combustion engine/generator system.
- A minor deletion of text from the definition for "Fuel cell."
- The deletion of the requirement that a PHEV have an equivalent all-electric range of more than 10 miles.

EPA agrees with the first comment. As written in the proposal, a vehicle with an onboard combustion engine that serves as a generator would not have been excluded from the definition of electric vehicle. However, EPA believes it should be. Although such a vehicle might be propelled by an electric motor directly, if the indirect source of electricity is an onboard combustion engine then the vehicle is fundamentally not an electric vehicle. EPA is also adopting the commenter's proposed rephrasing of the definition for "Fuel cell," which is simpler and clearer. Finally, in the context of the advanced technology incentive provisions in this final rule, EPA concurs with the commenter that the requirement that a PHEV have an equivalent all-electric range of at least ten miles is unnecessary. In the context of the proposed credit multiplier EPA was concerned that some vehicles could install a charging system on a limited battery and gain credit beyond what the limited technology would deserve simply by virtue of being defined

as a PHEV. However, because EPA is not finalizing the proposed multiplier provisions (see Section III.C.3) and is instead using as the sole incentive the zero emission tailpipe level as the compliance value for a manufacturer's fleetwide average, this concern is no longer valid. Since EPA is not promulgating multipliers, the concern expressed at proposal no longer applies, and each PHEV will get a benefit from electricity commensurate with its measured use of grid electricity, thus EPA is no longer concerned about the multiplier effect. Thus, EPA is finalizing the following definitions in the regulations:

- *Electric vehicle* means a motor vehicle that is powered solely by an electric motor drawing current from a rechargeable energy storage system, such as from storage batteries or other portable electrical energy storage devices, including hydrogen fuel cells, provided that:
    - Recharge energy must be drawn from a source off the vehicle, such as residential electric service;
    - The vehicle must be certified to the emission standards of Bin #1 of Table S04-1 in paragraph (c)(6) of §86.1811; and
    - The vehicle does not have an onboard combustion engine/generator system as a means of providing electrical energy.
- *Fuel cell electric vehicle* means a motor vehicle propelled solely by an electric motor where energy for the motor is supplied by a fuel cell.
- *Fuel cell* means an electrochemical cell that produces electricity via the non-combustion reaction of a consumable fuel, typically hydrogen.
- *Plug-in hybrid vehicle (PHEV)* means a hybrid electric vehicle that has the capability to charge the battery from an off-vehicle electric source, such that the off-vehicle source cannot be connected to the vehicle while the vehicle is in motion.

5-Year Lifespan of Credits

Mr. Yuli Chew supported EPA's proposed 5-year lifespan of credits. We note that the final rule adopted the 5-year lifespan for credits as proposed.

Credit Transfer Process

Mr. Yuli Chew recommended that credits transferred from the truck compliance program to the passenger car program should be devalued by 20% annually or more. There was no technical justification provided with the comment. EPA is not aware of a rationale for devaluing truck compliance credits and therefore did not consider this suggestion.

5.10.5. Enforcement

Organization: Ford Motor Company
Association of International Automobile Manufacturers (AIAM)
Alliance of Automobile Manufacturers (Alliance)
Volvo Car Corporation
Mitsubishi Motors R & D of America (MRDA)
Hyundai Motor Company

Toyota Motor North America
Natural Resources Defense Council
California Air Resources Board
Honeywell Transportation Systems
National Automobile Dealers Association (NADA)
Fisker Automotive, Inc.
People's Republic of China

Comment:

Ford Motor Company:

Compliance Penalties

The NPRM states that if a manufacturer fails to comply with GHG standards, EPA determines how many high-emitter vehicles need to be removed from the fleet to achieve compliance. This number of vehicles would be deemed 'nonconforming' and not covered by a certificate. Manufacturers would be subject to penalties of up to $37,500 per vehicle and injunctive relief, which would presumably include the authority to require recall under CAA 207.

The CAA gives EPA a variety of powerful enforcement tools, which may be appropriate in cases where after treatment systems fail and vehicles with high criteria pollutant emissions need to be taken off the road. However, such enforcement authorities are excessive in the case of a GHG fleet average, which is comparable to a fuel economy standard. The maximum CAFE penalty ever paid has been approximately $30 million. Under the EPA regime, the potential penalty for 10,000 'nonconforming' vehicles (a relatively small number for a large manufacturer) would be $375 million. That plus the threat of injunction/recall provides EPA with excessive leverage in an enforcement context, especially when the primary cause of non-compliance may be market shifts, economic disruptions, or other factors outside of the manufacturer's control. Injunction/recall is unlikely to ever be appropriate, since there is probably no nonconformance (or remedy) as to individual vehicles. Rather than employing its enforcement leverage/discretion on a case-by-case basis, EPA should establish a separate regulation or policy on GHG enforcement that provides for lower maximum penalties and limits injunctive relief to egregious violations. In the case of noncompliance with fleet average GHG standards, the policy should provide for maximum penalties comparable to those under the CAFE program. The violations are comparable, and EPCA indicate Congress's intent as to an appropriate level of penalties for a noncompliance of this kind. [OAR-2009-0472-7082.1, p. 24]

Association of International Automobile Manufacturers (AIAM):

As recognized in the proposal, recall is not an appropriate enforcement mechanism for fleet-average regulations.

Unlike the National Traffic and Motor Vehicle Safety Act, EPCA does not provide for recall and remedy in the event of a noncompliance. The presence of recall and remedy provisions in the Safety Act and their absence in EPCA is believed to arise from the difference in the application

of the safety standards and CAFE standards. A safety standard applies to individual vehicles; that is, each vehicle must possess the requisite equipment or feature that must provide the requisite type and level of performance. If a vehicle does not, it is noncompliant. …

In contrast, a CAFE standard applies to a manufacturer's entire fleet for a model year. It does not require that a particular individual vehicle be equipped with any particular equipment or feature or meet a particular level of fuel economy. It does require that the manufacturer's fleet, as a whole, comply. … Thus, under EPCA, there is no such thing as a noncompliant vehicle, only a noncompliant fleet. No particular vehicle in a noncompliant fleet is any more, or less, noncompliant than any other vehicle in the fleet. *See* 74 FR at 49464. [OAR-2009-0472-7123.1, p.15]

The same rationale that counsels against adopting recall as an enforcement mechanism for CAFE standards would apply with just as much force to corporate average GHG emissions standards. To the extent that a manufacturer fails to meet the corporate average GHG emissions standard for a given year, it will most likely be because it failed to balance its fleet and sell the proper mix of vehicles, and not because of a failure of an emissions control device. Indeed, given the fact that the technologies that reduce GHG emissions relate principally to the efficiency with which the vehicle converts fuel to energy—such as, for example, hybrid or plug-in engines, advanced transmissions, and mass reduction—these technologies are not likely to "fail" in the sense that they are not functioning properly to reduce emissions. Rather, a fleet of perfectly functioning vehicles may nonetheless fail to meet the GHG emissions standard if the anticipated mix is not sold. Under these circumstances, recall would be an entirely inappropriate remedy. The Clean Air Act gives EPA the discretion to forego ordering a recall where the failure to meet an emission standard is the result of fleet imbalance. Section 207(c)(1) of the Clean Air Act provides that where "a substantial number of any class or category of vehicles or engines" fail to meet an emissions standard, then the manufacturer is to "submit a plan for remedying the nonconformity of the vehicles or engines," and that plan is to provide that the nonconformity "will be remedied at the expense of the manufacturer." 42 USC § 7541(c). Where the nonconformity is the result of a fleet imbalance, then the manufacturer can "remedy" the nonconformity in ways that do not include recalling its fleet. [OAR-2009-0472-7123.1, p.16]

For the above reasons we urge EPA to specify those limited circumstances under which recall would be appropriate for noncompliance with its greenhouse gas emissions requirements. [OAR-2009-0472-7123.1, p.16]

Alliance of Automobile Manufacturers (Alliance):

In-Use Testing: Enforcement of Fleet Average Requirements

EPA proposes to require in-use testing of a vehicle's CO2 emissions with the emissions compared to the model-level certification CO2 level used in calculating the manufacturer's fleet average. EPA would apply a 10 percent 'compliance factor adjustment' to the certification CO2 level to account for production and test variability. Under EPA's proposal, one response to a failure to comply with the fleet average standards after all credits have been applied would be to calculate the number of vehicles not meeting the fleet average standards and treat those vehicles

as not covered by emissions certifications, in effect deeming the certifications as "void ab initio." See 74 Fed. Reg. at 49,762. The Joint Notice suggests that such an approach to enforcement is consistent with EPA's enforcement regulations for other fleet average requirements that apply to non-GHG emissions. Id. at 49573. [OAR-2009-0472-6952.1,p.55]

Fleet average emissions requirements for GHG emissions are fundamentally different from such requirements for other emissions. As NHTSA and the federal courts reviewing fuel economy standards have long recognized, a manufacturer's ability to meet fleet average fuel economy levels can be dependent on fuel prices and other economic factors, which are conditions beyond the control of vehicle manufacturers. This is one reason why NHTSA must consider "economic practicability" in setting CAFE standards. 49 U.S.C. § 32902(f); see e.g. Public Citizen v. NHTSA, 848 F.2d 256, 265 (D.C. Cir. 1988); The dependence of EPA's proposed fleet average GHG standards on a manufacturer's fleet-wide fuel economy makes compliance with the proposed EPA standards subject to the same factors beyond a manufacturer's control. Imposition of severe sanctions when a manufacturer does not comply with the GHG fleet average requirement would be inconsistent with the CAFE program, which by law imposes a comprehensive enforcement program.. The inconsistency would have two dimensions: the CAFE law does not make manufacturers liable for penalties if compliance with the fuel economy standards was beyond a manufacturer's control (49 USC 32913) and EPCA prescribes specific civil penalties that are not contained in the proposed EPA enforcement rule (49 USC 32912). [OAR-2009-0472-6952.1, p.55]

Similarly, it was long ago settled under the Clean Air Act that "unless the cause of the [emissions] nonconformity is within the manufacturer's control, an imposition of liability would be an unwarranted financial burden on the manufacturers, unrelated to the strategy of forcing technological progress." Chrysler Corp. v. EPA, 631 F.2d 865, 888 (D.C. Cir. 1980). When the limits on EPA's enforcement powers recognized in Chrysler were identified in EPA's "Tier One" rulemaking in 1991, EPA was careful to limit the circumstances under which it would use a void-ab-initio sanction:

While the existence of a violation will depend solely on whether the manufacturer achieves the applicable [fleet average] phase-in percentage, the Agency reserves the right to exercise enforcement discretion in the assessment of civil penalties for that violation. The EPA recognizes that a manufacturer, notwithstanding its best efforts, may fail to achieve the required phase-in percentage due to circumstances beyond its control .... Thus, in seeking civil penalties for a violation, EPA will exercise its enforcement discretion according to the circumstances surrounding a violation. In practice, EPA does not intend to bring an enforcement action against a manufacturer if both of the following circumstances exist: the shortfall in actual sales from the required percentage is less than or equal to ten percent of the required phase-in percentage, and there is no indication that the shortfall resulted from bad faith on the part of the manufacturer. [OAR-2009-0472-6952.1, p.56]

56 Fed. Reg. 25,724, 25,729 (June 5, 1991) (emphasis added). The Alliance recommends that if EPA decides to proceed with void ab initio enforcement of the fleet average GHG requirement, EPA should add the "bad faith" element to the text of the rule, to ensure that the regulation reflects the statutory limits on EPA's enforcement powers. This is necessary not only based on

the limitations on those powers under the Clean Air Act recognized in Chrysler, but also to ensure consistency between the EPA and NHTSA regulatory programs. See Massachusetts, supra. [OAR-2009-0472-6952.1, p.56]

NHTSA and EPA Enforcement and Penalty Assessment for Non-Compliance

In the Preamble to the NPRM, EPA states it is proposing "a compliance program for the fleet average that utilizes CAFE program protocols with respect to testing, a certification procedure that operates in conjunction with the existing CAA Tier 2 certification procedures, and assessment of compliance with the in-use standards concurrent with existing EPA and manufacturer Tier 2 emission compliance testing programs." In addition, EPA states that, with this proposal, the Agency is providing the regulated community with "numerous flexibilities to help achieve compliance." 74 Fed. Reg. at 49,559. EPA requests comment on all aspects of the compliance program design, including comments about whether differences between the proposed compliance scheme for GHG and the existing compliance scheme for other regulated pollutants are appropriate. [OAR-2009-0472-6952.1, p.57]

The Alliance agrees with EPA's proposal to determine compliance with the fleet average CO2 standards when the model year closes out, as is currently the protocol under EPA's Tier 2 program as well as under the current CAFE program. We also agree that submitting one data set in satisfaction of both CAFE and GHG requirements is preferred and therefore would not impose unreasonable burdens on automobile manufacturers beyond what is required under the CAFE program. [OAR-2009-0472-6952.1, pp.57-58]

However, the Alliance has serious concerns about EPA's approach to the assessment of penalties and other relief for non-compliance under the proposed Greenhouse Gas Standards for vehicles in Model Years 2012-2016. We recognize that EPA has authority under Section 207(c) of the Clean Air Act 12 (CAA) to require manufacturers to recall and repair vehicles if the Agency determines there are a substantial number of vehicles that, although properly maintained and used, do not conform to emissions standards. EPA also has authority under Section 205 to assess civil penalties of up to $37,500 per vehicle for the introduction and sale of uncertified vehicles. [OAR-2009-0472-6952.1, p.58]

Yet, there are critical differences that the EPA has overlooked in its proposal. The CAA recall provision was intended to discourage, and provides remedies for, situations in which manufacturers produce nonconforming vehicles that emit pollution in excess of established standards. In the case of criteria pollutants, this could be due to the installation of defective or substandard after-treatment components such as catalysts or NOx traps. In the case of fleet average GHG standards, after-treatment components are not an issue. [OAR-2009-0472-6952.1, p.58]

GHG emissions are primarily a function of fuel economy, which in turn is a function of vehicle size, vehicle design, and overall fleet mix. Compliance with fleet average GHG standards depends on many factors; in particular, whether or not the market responds to products in accordance with a manufacturer's expectations. The market, in turn, reacts to a host of forces

including economic conditions, fuel prices, style trends, and other factors. [OAR-2009-0472-6952.1, p.58]

Both NHTSA and EPA acknowledge that these standards will be a significant challenge for auto manufacturers and their suppliers since they will have "…to devote considerable engineering and development resources before 2012 laying the critical foundation for the widespread deployment of upgraded technology across a high percentage of the 2012– 2016 fleet…," particularly in the current economic climate. 74 Fed. Reg. at 49,466. [OAR-2009-0472-6952.1, p.58]

As EPA and NHTSA are well aware, the Alliance and its members are firmly committed to meeting the GHG and CAFE Standards proposed for MY 2012-16. The Alliance agrees that both NHTSA and EPA must assess the feasibility and practicability of their standards as they impact: emissions reductions; oil conservation; fuel savings by consumers; the auto industry; and, safety concerns. [OAR-2009-0472-6952.1, p.58]

In its proposal, EPA states that "…penalties under the CAA are typically determined on a vehicle-specific basis by determining the number of a manufacturer's highest emitting vehicles that caused the fleet average standard violation." 74 Fed. Reg. at 49,483. Consistent with such an approach, the following scenario would be a real possibility if and when any manufacturer failed to meet EPA's GHG Standards. [OAR-2009-0472-6952.1, pp.58-59]

Once the manufacturer failed to comply with fleet average GHG standards, EPA would determine how many high-emitter vehicles need to be removed from the fleet to achieve compliance. This number of vehicles would be deemed 'nonconforming' (subject to recall) AND not covered by a certificate (subject to civil penalty). Manufacturers would be subject to both the expense of a recall and penalties of up to $37,500 per vehicle and possibly also injunctive relief. The potential penalty for 10,000 nonconforming vehicles (a relatively small number for a large manufacturer) would be more than $375 million. Yet this penalty scenario might result from factors outside of a manufacturer's control, such as the market disruptions associated with a major recession and unforeseen changes in consumer demand and fuel prices. While EPA has considerable discretion in the assessment of penalties, it is unclear how or when they would choose to use it. Moreover, it is not clear how EPA could order a recall pursuant to CAA Section 207(c) when there might be no repair remedy to correct nonconformity with a GHG standard. [OAR-2009-0472-6952.1, p.59]

Subjecting manufacturers to liability for recalls and debilitating fines over fleet average GHG emissions does not square with the intent of Congress when it created the EPCA civil penalty provisions for violations of CAFE. The CAFE penalty for non-compliance is $5.50 for each tenth of a mpg that a manufacturer's average fuel economy falls short of the standard for a given model year, multiplied by the total volume of those vehicles in the affected fleet, manufactured for that model year. 49 USC §32919(b). While the civil penalties assessed under EPCA certainly can be very significant, they are at least an order of magnitude less onerous than the potential CAA penalties for a similar noncompliance situation. Moreover, EPCA does not provide for vehicle recalls due to noncompliance with fuel economy standards, likely because Congress recognized the futility of such a remedy as applied to vehicle fuel economy. [OAR-2009-0472-6952.1, p.59]

EPA Response to Comments

To ensure that penalty assessment and enforcement authority are properly applied, EPA should establish a separate penalty policy that specifically addresses non-compliance with the GHG standards being proposed. At a minimum, the policy should provide for lower maximum penalties for noncompliance with fleet average GHG standards, in line with the penalties assessed under the CAFE program and it should also limit recall relief to egregious violations where a vehicle-specific remedy can be identified. [OAR-2009-0472-6952.1, p.59]

EPA's proposed methodology for determining the number of vehicles not in compliance is also problematic. EPA proposes to determine this value on the basis of the amount of non-offset debits and the fleet average greenhouse gas standard for the year in which the deficit failed to be offset. As noted in Section III.E.6 of the NPRM, this is a departure from "the Tier 2 approach of penalizing vehicles from the year in which the deficit was generated." The Alliance also notes that this is inconsistent with the approach taken by California's fleet average greenhouse gas regulation (13 CCR §1961.1 (b)(3)(A)). [OAR-2009-0472-6952.1, p.59]

For example, if a manufacturer has a debit situation in the 2012 model year that is not covered by carry back credits from either fleet in the 2013, 2014, or 2015 model years, the 2012 model year standard should be used to determine the number of nonconforming vehicles. [OAR-2009-0472-6952.1, p.59]

Penalizing vehicles produced in the model year in which an earlier model year's debit failed to be offset is not appropriate. The conditional nature of the certificate is for a specific test group in a specific model year; any non-conformance with a particular certificate should be assessed against that particular model year, not against a future model year's certificate in which vehicles conform to the fleet average greenhouse gas standard. [OAR-2009-0472-6952.1, p.60]

Assessing penalties against a later model year fleet's vehicles by deeming them not covered by a certificate of conformity also causes issues in the determination of that fleet's level of conformance. Removal of any vehicles from the fleet in the year in which a deficit failed to be offset will result in a modification of both that fleet's standard and average emission level. This effect is compounded by EPA's proposal to "designate as nonconforming those vehicles with the highest emission values first." Due to the attribute-based standard, the removed vehicles are likely to be larger vehicles with less stringent standards, but not necessarily those with the highest difference between their performance and their individual target standard. In fact, the highest emission value vehicles may have emission levels below their target standard. Removal of these vehicles will result in a lowering of the fleet standard (fewer large vehicles) and a lessening of the fleet's performance to the standard (fewer vehicles below their individual target standard). [OAR-2009-0472-6952.1, p.60]

For the reasons outlined above, the Alliance recommends that the number of non-conforming vehicles be based on the number of debits not offset and the fleet standard from the year in which the debit was incurred. The vehicles that are furthest from their specific GHG targets should be designated as the ones not in conformance, for purposes of assessing any penalties. [OAR-2009-0472-6952.1, p.60]

Volvo Car Corporation:

The NPRM states that if a manufacturer fails to comply with GHG standards, EPA determines how many high-emitter vehicles need to be removed from the fleet to achieve compliance. This number of vehicles would be deemed 'nonconforming' and not covered by a certificate. Manufacturers would be subject to penalties of up to $37,500 per vehicle and injunctive relief, which would presumably include the authority to require recall under the Clean Air Act (CAA 207).

The CAA gives EPA a variety of powerful enforcement tools, which may be appropriate in cases where after treatment systems fail vehicles with high criteria pollutant emissions need to be taken off the road. However, such enforcement authorities are excessive in the case of a GHG fleet average, which is comparable to a fuel economy standard. The maximum CAFE penalty ever paid has been approximately $30 million. Under the EPA regime, the potential penalty for 10,000 nonconforming vehicles (a relatively small number for a large manufacturer) would be $375 million. That plus the threat of injunction/recall provides EPA with excessive leverage in an enforcement context, especially when the most likely cause of non-compliance would be market shifts or economic disruptions. Injunction/recall is unlikely to ever be appropriate, since there is probably no nonconformance (or remedy) as to individual vehicles. Rather than employing its enforcement leverage/discretion on a case-by-case basis, EPA should establish a separate regulation or policy on GHG enforcement that provides for lower maximum penalties and limits injunctive relief to egregious violations. In the case of noncompliance with fleet average GHG standards, the policy should provide for penalties comparable to those under the CAFE program. The violations are comparable, and EPCA indicates Congress's intent as to an appropriate level of penalties for a noncompliance of this kind. [OAR-2009-0472-7168.1 p.6]

Mitsubishi Motors R & D of America (MRDA):

Mitsubishi Motors is concerned that the extremely strict EPA noncompliance penalties are not harmonized with the NHTSA CAFE noncompliance penalties. [OAR-2009-0472-7125.1, p.2]

Both EPA and NHTSA have noncompliance penalties within their respective standards. However, there is a significant difference between the two penalty structures. NHTSA's noncompliance penalty is $5.50 for each tenth of a mpg that a manufacturer's average fuel economy falls short of the standard for a given model year, multiplied by the total volume of those vehicles in the affected fleet, manufactured for that model year. EPA's GHG noncompliance penalties are based on vehicles exceeding criteria pollutant standards, which can be corrected through the replacement of defective or substandard parts. However, a GHG fleet average is highly dependent on vehicle size, weight, and overall fleet mix – none of which can be remedied with the replacement of parts. Market fluctuations could easily force a manufacturer into noncompliance and subject them to the maximum fine of $37,500 per vehicle, which is higher than the market price of most vehicles. These fines could bankrupt a smaller company, such as Mitsubishi Motors, for circumstances beyond their control and are not in the spirit of a harmonized National Program. [OAR-2009-0472-7125.1, p.4]

Hyundai Motor Company:

EPA Response to Comments

EPA discusses that potential remedies may be necessary in the event of failure to comply with the fleet average. Hyundai would like to suggest two potential options for addressing remedies

First, it is possible that an in-use failure will be directly tied to the malfunction of a part or component. In many cases, we expect that the part malfunction will also have an impact on other criteria pollutants, and any remedial action would be based on the emissions impact of the part malfunction. Under this scenario, enforcement action should follow the existing processes for criteria pollutants.

Second, EPA proposes to set an in-use standard at ten percent above the model-level CO2 certification emission level, which would apply to all in-use testing, including the In-Use Verification Program, selective enforcement audits and EPA internal testing. EPA notes that exceeding the in-use standard will be deemed a failure (74 FR 49483). Hyundai would like to suggest that in the event that an in-use failure is confirmed, EPA should provide the manufacturer with the option to readjust the fleet average of the failing model year. This readjustment would necessitate recalculating compliance with the GHG program from that year forward and possibly utilizing and recalculating existing credits. [OAR-2009-0472-7231.1, p.7]

Toyota Motor North America:

As proposed, each Certificate of Conformity (certificate) would be conditional upon the manufacturer achieving CO2 fleet average standards. Failure to meet the standard, subject to application of appropriate credits, would require EPA to make a determination as to which vehicles within the test group caused the fleet average standard to be exceeded. Toyota has the following concerns:

-First, the proposal could extend the conditional certificate period well beyond the end of the certification model year. In the unlikely event of noncompliance, a manufacturer would be subject to penalties and injunctive orders on an individual basis for sale of vehicles that are not covered by the certificate (up to $37,500 per vehicle).

-Second, as NHTSA would also assess CAFE fines for the same noncompliance scenario, a manufacturer could face fines and penalties from two agencies concerning essentially the same noncompliance. [OAR-2009-0472-7291, p.32]

In the event that EPA moves forward with penalties, then at a minimum, it should establish a penalty policy that articulates requisite procedures and appropriate fines for non-compliance in advance of program implementation. Such a transparent process would avoid potential inequities that could result if manufacturers are forced to enter into closed-door and confidential penalty negotiations with EPA. [OAR-2009-0472-7291, p.33]

Natural Resources Defense Council:

Compliance through Voluntary Fees Should Not Be Permitted
EPA should not permit voluntary payments or fees in lieu of achieving actual GHG reductions to satisfy compliance with the GHG standards. Manufacturers found in noncompliance should be

subject to enforcement actions that include a combination of vehicle sales restrictions and financial penalties that are strong enough to encourage the aggressive pursuit and implementation of GHG reduction technologies to meet the standards. EPA should not adopt a civil penalty structure for compliance similar to that used for CAFE by NHTSA because it does not adequately force technology innovation across the industry. Throughout the existence of the CAFE program, several manufacturers have chosen to pay fines as a less expensive alternative to implementing the technologies necessary to meet fuel economy standards. As a result, the industry average fuel economy is lower than that expected from CAFE standards and oil savings are therefore reduced.[OAR-2009-0472-7141.1, p. 20]

EPA has developed multiple mechanisms to ensure that manufacturers have sufficient lead time to deploy the necessary GHG reduction technologies to be in full compliance by MY 2016. EPA has proposed to phase out many of the mechanisms because they are meant to only be necessary for an industry transition to GHG standards structured under requirements of the CAA. We believe these mechanisms are more than adequate for attaining compliance. The key mechanisms include the Temporary Lead-time Allowance Alternative Standard, trading of credits coupled with a generous early credit proposal, inclusion of FFV credits for MY 2012-2015, transferring credits between car and truck fleets, and 3-year carry forward of deficits. EPA specifically included these mechanisms so that all manufacturers would have a pathway to comply without fees by the 2016 model year. Allowing a voluntary fee structure would certainly stall the deployment of pollution-reduction technologies. [OAR-2009-0472-7141.1, p. 20]

California Air Resources Board:

We disagree with the Alliance comment (in Document ID EPA-HQ-OAR- 2009-0472-6952.1) concerning penalties proposed by EPA under its Clean Air Act authority and believe EPA took a reasonable and proper approach. By moving ahead at a technology application level toward the 2020 MY more ambitious than what a straight-line projection under ESIA/EPCA would require, EPA is arguably fulfilling its duty to address the separate public health and welfare goals not present in EISA/EPCA but required by the Clean Air Act, as discussed in Massachusetts et. al. v. EPA, Central Valley, and Green Mountain. However, to ensure that those greater greenhouse gas emission reductions come to fruition, EPA rightly eschewed simply aligning its penalty and enforcement policies with those under the current CAFE structure. [OAR-2009-0472-7189.1, pp.13-4]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

Honeywell Transportation Systems:

The Clean Air Act authorizes EPA and NHTSA to collect fines and other penalties for failure to comply with the fleet average GHG and fuel economy standards. Honeywell believes that any fines imposed and collected under the CAFE & GHG standards should be appropriated to the development of vehicle technologies that continue to improve fuel economy in the future. The direct application of the penalties collected will support the underlying legislative policy and drive innovation. [OAR-2009-0472-7165.1, p.6]

National Automobile Dealers Association (NADA):

The National Program should incorporate NHTSA's traditional CAFE enforcement tools, including its civil penalty policy, it makes no sense to apply EPA's traditional vehicle-based compliance tools to a fleet average program of this sort. Noncompliance scenarios such as those resulting from a sudden drops in fuel prices are no place for EPA's recall, de-certification (void ab initio),/ and severe per vehicle penalty tools. An attempt to shoehorn EPA's mobile source enforcement strategies into the National Program would only serve to prove NADA's contention that the best National Program would be one where EPA effectively adopted NHTSA's CAFE standards by reference, without attempting to establish duplicative tailpipe GHG standards. [OAR-2009-0472-7182.1, p.9]

Fisker Automotive, Inc.:

Fisker Automotive recommends higher penalties overall. We recommend a $10 penalty per annual gallon of gasoline consumed beyond the baseline. For a 15 year life, that represents a $0.67 penalty per excess gallon consumed. [OAR-2009-0472-8732.1, p.4]

The regulation currently reads,

"The penalty, as adjusted for inflation by law, is $5.50 for each tenth of a mpg that a manufacturer's average fuel economy falls short of the standard for a given model year multiplied by the total volume of those vehicles in the affected fleet (i.e., import or domestic passenger car, or light truck), manufactured for that model year.' [OAR-2009-0472-8732.1, pp.4-5]

Per this initial proposed regulation, the most consuming new vehicle sold today (a supercar) would only have a penalty of about $1,100. For the regulation to support real progress, penalties must be much larger—on the order of the costs to improve fuel economy (through electrification, light-weighting, etc.). [OAR-2009-0472-8732.1, p.5]

This penalty model represents the maximum penalty an automaker can incur for failure to meet fleet fuel economy requirements. Unless individual automakers *and* the US light duty vehicle fleet as a whole both consistently fail to meet fuel economy targets, no automaker will need to pay these maximum penalties. Automakers will submit carry back plans if they miss the mark, allowing "the following three model years to earn enough credits to make up for the deficit." Furthermore, automakers will practice the averaging, banking, and trading methods allowed to reduce their overall costs. As the US LDV fleet as a whole increases its fuel economy, the market will allow individual automaker penalties to fall in step—that is, supply of credits will increase and demand will decrease. This aligns well with regulatory goals. [OAR-2009-0472-8732.1, p.5]

People's Republic of China:

We note that, it is the responsibility for EPA to protect public health and benefit, which is totally independent of the responsibility of NHTSA improving the energy efficiency. Given that the fuel

consumption of vehicle is calculated directly from the emission of CO2, as to the behavior that violates the emission standard of the greenhouse gas (GHG) and Corporate Average Fuel Economy (CAFE) standard at the same time, we think it is unreasonable that EPA and NHTSA impose punishment respectively. Such kind of behavior is suggested to be punished only once by one authority of the United States. [OAR-2009-0472-11269, p.3]

EPA Response:

Fleet Average Penalties

Manufacturer comments expressed concern about potential enforcement action for violations of the greenhouse gas standards, and the circumstances under which EPA would impose penalties. Manufacturers also suggested that EPA should adopt a penalty structure similar to the one in place under CAFE. The California Air Resources Board (CARB) disagreed with the automobile manufacturer comments and expressed their belief that "EPA took a reasonable and proper approach."

The CAA specifies different civil penalty provisions for noncompliance than EPCA does, providing for a range of potential penalties that are based on taking the relevant circumstances and factors into consideration, as compared to the specified penalty amount under CAFE. This structure has worked well in the past, without predefined penalties under the CAA, and EPA expects it will also work well here. Manufacturers raised concern over noncompliance driven by short-term market fluctuations, but the ability of manufacturers to generate credits or to rely on future credit generation means short term market fluctuations can be addressed without leading to noncompliance. In addition, EPA recognizes that it may be appropriate, should a manufacturer fail to comply with the NHTSA fuel economy standards as well as the CO_2 standard in a case arising out of the same facts and circumstances, to take into account the civil penalties that NHTSA has assessed for violations of the CAFE standards when determining the appropriate penalty amount for violations of the CO_2 emissions standards. This approach is consistent with EPA's broad discretion to consider "such other matters as justice may require," and will allow EPA to exercise its discretion to prevent injustice and ensure that penalties for violations of the CO_2 rule are assessed in a fair and reasonable manner.

The statutory penalty factor that allows EPA to consider "such other matters as justice may require" vests EPA with broad discretion to reduce the penalty when other adjustment factors prove insufficient or inappropriate to achieve justice.[33]. The underlying principle of this penalty factor is to operate as a safety mechanism when necessary to prevent injustice.[34]

In other environmental statutes, Congress has specifically required EPA to consider penalties assessed by other government agencies where violations arise from the same set of facts. For instance, section 311(b)(8) of the Clean Water Act, 33 U.S.C. 1321(b)(8) authorizes EPA to consider any other penalty for the same incident when determining the appropriate Clean Water Act penalty. Likewise, section 113(e) of the CAA authorizes EPA to consider "payment by the

[33] In re Spang & Co., 6 E.A.D. 226, 249 (EAB 1995)
[34] B.J. Carney Industries, 7 E.A.D. 171, 232, n. 82 (EAB 1997).

violator of penalties previously assessed for the same violation" when assessing penalties for certain violations of Title I of the Act.

Method of Determining Non-Complying Vehicles

EPA received comments from the Alliance, regarding the method of determining non-complying vehicles. The Alliance indicated that "EPA's proposed methodology for determining the number of vehicles not in compliance is also problematic" and "inconsistent with the approach taken by California's fleet average greenhouse gas regulation."

EPA proposed that manufacturers will report to EPA their fleet average and fleet average standard for a given model year (reporting separately for each of the car and truck averaging sets), the credits or deficits generated in the current year, the balance of credit balances or deficits (taking into account banked credits, deficit carry-forward, etc., and whether they were in compliance with the fleet average standard under the terms of the regulations. EPA will review the annual reports, figures, and calculations submitted by the manufacturer to determine any nonconformance.

Each certificate, required prior to introduction into commerce, will be conditioned upon the manufacturer attaining the CO_2 fleet average standard. If a manufacturer fails to meet this condition and has not generated or purchased enough credits to cover the fleet average exceedance following the three year deficit carry-forward, then EPA will review the manufacturer's production for the model year in which the deficit originated and designate which vehicles caused the fleet average standard to be exceeded.

EPA proposed that the vehicles that would be identified as nonconforming would come from the most recent model year, and some comments pointed out that this was inconsistent with how the NLEV and Tier 2 programs were structured. EPA agrees with these comments and is finalizing an enforcement structure that is essentially identical to that for existing programs. EPA would designate as nonconforming those vehicles with the highest emission values first, continuing until a number of vehicles equal to the calculated number of non-complying vehicles as determined above is reached. Those vehicles would be considered to be not covered by the certificates of conformity covering those model types. In a test group where only a portion of vehicles would be deemed nonconforming, EPA would determine the actual nonconforming vehicles by counting backwards from the last vehicle produced in that model type. A manufacturer would be subject to penalties and injunctive orders on an individual vehicle basis for sale of vehicles not covered by a certificate. This is the same general mechanism used for the National LEV and Tier 2 corporate average standards.

EPA does not agree that it is more appropriate, as Ford suggests, to designate the vehicles not in conformance as those that are furthest from their specific GHG target values. The methodology EPA proposed has a very specific purpose: to penalize a sufficient number of vehicles such that the GHG deficit is "offset" by vehicles subject to enforcement action. For example, if the deficit subject to enforcement action is 10,000 grams/mile of CO_2 in model year 2016, and the manufacturer's fleet average standard in that year was 250 grams/mile, the number of vehicles to be penalized would be 10,000 ÷ 250, or 40 vehicles. Since the highest emitters from that model

year will, by definition, be above the average of 250 grams/mile, then penalizing those will guarantee that at least 10,000 grams/mile will be addressed by the penalty. (E.g., if those highest emitters emit 300 grams/mile, then penalizing 40 of them will "offset" 40 × 300, or 12,000 grams/mile.) Using Ford's suggested method will not guarantee that the appropriate excess emissions will be addressed by the penalty. For example, it is possible that those vehicles that are farthest from their target values are still relatively low-emission vehicles. If EPA chose to use Ford's methodology, then it's possible that vehicles that emit 240 grams/mile could be the farthest from their target value and thus selected to be penalized, but if EPA penalized 40 of those vehicles only 9600 grams/mile (40 × 240) of the deficit would be offset. This would be a failure of the fundamental intent of the methodology to remove certificates such that the deficit is fully accounted for, and thus EPA rejects Ford's suggestion.

Recall

The Association of International Automobile Manufacturers (AIAM) recommended that EPA should not adopt recall as an enforcement mechanism for failure to meet both the in-use (model type) GHG emission standard and the corporate average GHG emission standard. Regarding noncompliance with the corporate average GHG standard, AIAM believes that the Clean Air Act gives EPA the discretion to forgo ordering a recall where the failure to meet an emission standard is the result of fleet imbalance and remedy the nonconformity in ways that do not include recalling its fleet. Fleet imbalance could occur due to factors which may be outside of a manufacturer's control, e.g. where the manufacturer sells more vehicles with CO2 levels above the footprint target than they sell vehicles with CO2 levels below the footprint target for the respective models). AIAM, thus urged "EPA to specify those limited circumstances under which recall would be appropriate for noncompliance with its greenhouse gas emissions requirements."

Hyundai Motor Company commented that if an in-use failure can be directly tied to the malfunction of a part or component, that enforcement action should follow the existing processes for criteria pollutants (e.g. the recall process). Hyundai also suggested that "in the event that an in-use failure is confirmed, EPA should provide the manufacturer with the option to readjust the fleet average of the failing model year" (i.e. to adjust the credit or debit balance accordingly to account for the failing in-use vehicles).

EPA agrees with AIAM that recall is not a good mechanism for dealing with noncompliance of the corporate average standard. However, recall can be an effective tool for enforcement of the in-use standards. There are a number of problems that can occur to a specific vehicle model that could cause noncompliance with the appropriate in-use standard and that could be repaired, such as a defect in a part or component, a misbuild, or an improperly functioning new technology. Since these types of problems are within a manufacturer's control, unlike a fleet imbalance due to unanticipated sales fluctuations, a recall would be an appropriate and effective mechanism for addressing noncompliance with the in-use standard. EPA agrees with Hyundai's comment that if an in-use failure can be directly tied to the malfunction of a part or component, the appropriate enforcement action should be a recall following the recall process for criteria pollutants. EPA would also argue that recall would be an appropriate enforcement tool for misbuild situations where an incorrect part, component. Software, or calibration was installed in a vehicle resulting in a failure of the in-use standard.

Finally, EPA disagrees with Hyundai's suggestion that manufacturers be given the option to readjust their fleet average to account for failing the vehicle model in lieu of a recall action. This would be inconsistent with EPA's other rules. For example, in the Tier 2 program, if a manufacturer had a test group that were to fail the Bin 5 emission standard, it would be required to recall the vehicles and fix the problem that caused the noncompliance. They would not be allowed to retroactively reassign the vehicle to a higher bin and recalculate their fleet average (which is fundamentally what Hyundai is suggesting). The purpose of a recall is to fix a problem with a vehicle that causes an emission noncompliance. This means a defective part or an incorrect part or calibration, not a fleet imbalance due to unanticipated sales fluctuations. Allowing a vehicle model that exceeded the in-use standard as a result of a fixable problem to continue to operate in the field would contradict the purpose of the in-use standard. Therefore, the suggestion of readjusting the fleet average in lieu of recall is not an appropriate option and was not considered by EPA.

5.10.6 Prohibited Acts in the CAA

Organization: No comments received

5.10.7. Other Certification Issues

Organization: Ford Motor Company
Honda Motor Company
Ferrari S.p.a
Association of International Automobile Manufacturers (AIAM)
Alliance of Automobile Manufacturers (Alliance)
NGVAmerica
State of New Jersey
Automotive Aftermarket Industry Association (AAIA); et.al
New York State Department of Environmental Conservation

Comment:

Ford Motor Company:

In addition, Ford agrees that additional GHG on-board diagnostic (OBD) monitoring is not appropriate at this time. OBD was envisioned as a means of monitoring devices affecting criteria pollutants that are principally controlled through engine controls and after-treatment devices. CO_2 performance, on the other hand, is influenced by a wide variety of parameters. Malfunctions that impact engine efficiency, such as virtually all faults that affect fuel system control, EGR control, variable valve timing control, engine cooling system operation, cylinder misfire, etc. are already monitored by OBD. [OAR-2009-0472-7082.1, p. 17]

Honda Motor Company:

In an existing regulation EPA requires PHEVs to be equipped with a "useful life indicator for the battery" when the range deteriorates to less than 75 percent of its initial range. On the other hand,

in the NPRM, EPA states: "EPA does not plan to require CO_2 emissions as one of the applicable standards required for the OBD monitoring threshold." We agree that more research should be done regarding the need and feasibility of OBD monitoring, yet the PHEV useful life indicator seems to be a kind of OBD monitoring. As such, Honda believes that EPA should take this opportunity to clarify its intent with respect to the PHEV useful life indicator. [NHTSA-2009-0059-0095.1, p.10-11]

Ferrari S.p.a:

We support the proposal that at this time EPA does not require CO_2 emissions as one of the applicable standards required for the OBD monitoring threshold. It is necessary to gain knowledge regarding the deterioration, if any, of the systems and devices that affect the fuel economy and the CO_2 emissions to define, if strictly necessary, specific requirements for the OBD system, working closely with CARB. No additional and unnecessary burdens should be adopted for the on-board diagnostic system. [OAR-2009-0472-7214.1 p.5]

We agree with EPA that is proposing to retain its current high altitude regulations so manufacturers would not normally be required to submit vehicle CO_2 test data for high altitude. Instead, they would submit an engineering evaluation indicating that common calibration approaches will be utilized at high altitude, and therefore the compliance is assured also in these conditions. [OAR-2009-0472-7214.1 p.5]

Association of International Automobile Manufacturers (AIAM):

It would be premature for EPA to adopt a requirement for monitoring carbon dioxide emissions at this time. As EPA observes, it is not clear yet whether such monitoring is feasible. *See* preamble at 49574. [OAR-2009-0472-7123.1, p.11]

Alliance of Automobile Manufacturers (Alliance):

OBD for CO_2, N_2O and CH_4 (Proposed regulations in 40 C.F.R. 86.1806-05)

EPA has proposed to eliminate CO_2 as a consideration for OBD monitoring. [OAR-2009-0472-6952.1, p.52]

Recommendation:

We agree with EPA's decision to eliminate CO_2 as a consideration for OBD monitoring. We encourage EPA to consider eliminating CH_4 and N_2O from OBD monitoring as well. Adding testing for CH4 and N2O would significantly increase the OBD development burden, without significant benefit, since any malfunctions that increase CH_4 and N_2O emissions will more than likely be caught by current OBD systems. (This issue could also be resolved by EPA deciding to eliminate the CH_4 and N_2O standards as mentioned above in issue 1 Emission Standards.) [OAR-2009-0472-6952.1, p.52]

NGVAmerica:

According to EPA's proposal, the new regulations, including the proposed methane cap, would not cover small businesses that produce aftermarket alternative fuel systems. However, the regulations would cover large businesses that produce aftermarket systems. We believe that all aftermarket conversion system manufacturers should be exempt. As currently proposed, the regulations could actually discourage some large businesses from continuing to offer aftermarket conversion systems with the result that only small businesses will continue to do so. [OAR-2009-0472-11310, p. 3]

State of New Jersey:

The USEPA indicates in the proposal that it plans to evaluate on-board diagnostic (OBD) monitoring technology with regard to monitoring greenhouse gas related emissions systems and components, and use that evaluation to make a determination as to whether or not to include greenhouse gas related emissions components as part of the OBD requirements in a future regulatory action. The Department supports the inclusion of greenhouse gas emissions-related components as part of the OBD requirements. [OAR-2009-0472-7109.1, p.10]

Automotive Aftermarket Industry Association (AAIA):

We are also particularly concerned that since the Agency is proposing not to expand the systems monitored by the OBD computer, it will be uncertain to the car companies and the repair industry whether information needed to repair and maintain the technologies needed to meet this proposal will be shared with the independent aftermarket. If past history is any indication, the vehicle manufacturers, for competitive and other reasons, will be very reluctant to share this information absent government guidelines. [OAR-2009-0472-7057.1, p.3]

We are concerned that the current service information rule may be limited to parts and systems covered by the OBD system. If EPA does not require monitoring of these additional systems which affect greenhouse gas emissions by the OBD system, this rule might be the only proceeding that will consider access to service information for these systems. Therefore, the aftermarket strongly urges that the Agency include in this rulemaking provisions so that "emissions-related information" which may be accessed for service and repair would include information for systems on vehicles that impact global warming emissions whether or not they are monitored by the OBD computer. [OAR-2009-0472-7057.1, pp.3-4]

New York State Department of Environmental Conservation:

On Board Diagnostics
We support EPA's decision to not require OBD systems to monitor for CO_2 emissions. As EPA notes, there should be relatively little deterioration. Additionally, failures that would lead to major CO_2 emission increases would most likely be accompanied by operating problems that would require repair. Increased fuel costs would also encourage repair. Conditions which trigger the Malfunction Indicator Lamp (MIL) too easily could reduce the influence of the MIL light on consumer behavior, eroding the real emissions reductions currently attained when repairs are made based on OBD warnings. [OAR-2009-0472-7454, p.4]

Automotive Aftermarket Industry Association (AAIA)

While not mentioned in this proposal, vehicle maintenance is extremely important to improving fuel economy and reducing greenhouse gas emissions for the nation's vehicle fleet. This importance is supported by information available on the Department of Energy website, www.fueleconomy.gov. [OAR-2009-0472-7057.1, p.1]

According to the DOE website:

Fixing a car that is noticeably out of tune or has failed an emissions test can improve its gas mileage by an average of 4 percent, though results vary based on the kind of repair and how well it is done. Fixing a serious maintenance problem, such as a faulty oxygen sensor, can improve your mileage by as much as 40 percent. [OAR-2009-0472-7057.1, p.1]

The site further states that keeping tires inflated to proper pressure can improve gas mileage by around 3.3 percent and using the proper oil for a vehicle can provide a fuel economy benefit of 1-2 percent. [OAR-2009-0472-7057.1, p.1]

Based on these numbers, we estimate (see attachment) that if all car owners regularly took the above actions to maintain their vehicle, the nation would save 12 billion gallons of gasoline per year. The reductions in petroleum use would translate into a savings to car owners at the pump of $30 billion per year and a reduction of 116 million tons of CO2 equivalent every year. [OAR-2009-0472-7057.1, p.2]

The estimate for potential greenhouse gas emission reductions from proper maintenance compares favorably with EPA estimates that this proposal will result in approximately 950 million metric tons of ton of carbon dioxide equivalent emissions reductions over the life time of vehicles sold in model years 2012 through 2016. In fact, absent good maintenance, it is very unlikely that EPA will realize the global warming emissions reduction goals of this proposal. [OAR-2009-0472-7057.1, p.2]

Please be assured that the independent vehicle repair industry is committed to working with EPA and the Department of Transportation to ensure that car owners have access to the repair services necessary to ensure that their vehicles operate at their peak efficiency, thus reducing global warming emissions and depletion of our energy resources. However, unless action is taken by EPA as part of this rulemaking, the aftermarket is concerned that our industry will not have access to the information, tools and software needed to work on the technology that will be utilized by the manufacturers to meet the standards developed in this proposal. [OAR-2009-0472-7057.1, p.2]

There is little doubt that the changes to vehicle technology that will be required by the September 28, 2009 proposed rule will be extensive. While it is impossible to predict the extent of technology changes that will occur as a direct result of this rule, it is likely that air conditioning systems, braking, lubricants, turbochargers, and fuel injection systems will all be affected. These changes will mean that the information needed to ensure that these systems are maintained properly also will need to be available to technicians that will maintain them. Of course, many of

the systems that impact fuel economy such as the oxygen sensor and catalytic converter are already covered by EPA's service information availability rules. However, many changes such as those impacting braking and air conditioning likely are not covered. [OAR-2009-0472-7057.1, p.3]

In addition, tire pressure sensors while required by the National Highway Traffic Administration (NHTSA) for safety reasons, also play an important role in ensuring that vehicles are operating at peak fuel efficiently. As our comments indicated at the outset, an improperly inflated tire can mean a fuel efficiency loss of 3.3 percent. Yet, there is no requirement for car companies to make available to the independent service industry any information necessary to ensure that the tire pressure sensor is working properly after a tire is changed or repaired. [OAR-2009-0472-7057.1, p.3]

If the Agency is planning to revise the definition of emissions to include greenhouse gas emissions, we believe that EPA is also obligated to ensure that the service information rule covers all vehicle systems that impact emissions of greenhouse gases. In developing this rule, EPA must look not only at new technologies that will be utilized on internal combustion engines, but also at hybrid systems where items such as regenerative braking might not have been included under the current service information rule, but are essential to ensuring that the hybrid vehicles operate properly. [OAR-2009-0472-7057.1, p.3]

EPA Response:

Onboard Diagnostic (OBD) Requirements

The light-duty on-board diagnostics (OBD) regulations require manufacturers to detect and identify malfunctions in all monitored emission-related powertrain systems or components.[35] Specifically, the OBD system is required to monitor catalysts, oxygen sensors, engine misfire, evaporative system leaks, and any other emission control systems directly intended to control emissions, such as exhaust gas recirculation (EGR), secondary air, and fuel control systems. The monitoring threshold for all of these systems or components is 1.5 times the applicable standards, which typically include NMHC, CO, NO_X, and PM. EPA did not propose that CO_2 emissions would become one of the applicable standards required to be monitored by the OBD system. EPA did not propose CO_2 become an applicable standard for OBD because it was confident that many of the emission-related systems and components currently monitored would effectively catch any malfunctions related to CO_2 emissions. For example, malfunctions resulting from engine misfire, oxygen sensors, the EGR system, the secondary air system, and the fuel control system would all have an impact on CO_2 emissions. Thus, repairs made to any of these systems or components should also result in an improvement in CO_2 emissions. In addition, EPA did not have data on the feasibility or effectiveness of monitoring various emission systems and components for CO_2 emissions and did not believe that it would be prudent to include CO_2 emissions without such information.

EPA did not address whether N_2O or CH_4 emissions should become applicable standards for OBD monitoring in the proposal. Several manufacturers felt that EPA's silence on this issue

[35] 40 CFR 86.1806-04

implied that EPA was proposing that N_2O and CH_4 emissions become applicable OBD standards. They commented that EPA should not include them as part of OBD. They felt that adding N_2O and CH_4 would significantly increase OBD development burden, without significant benefit, since any malfunctions that increase N_2O and CH_4 would likely be caught by current OBD system designs. EPA agrees with the manufacturer's comments on including N_2O and CH_4 as applicable standards. Therefore, at this time, EPA is not requiring CO_2, N_2O, and CH_4 emissions as one of the applicable standards required for the OBD monitoring threshold. EPA plans to evaluate OBD monitoring technology, with regard to monitoring these GHG emissions-related systems and components, and may choose to propose to include CO_2, N_2O, and CH_4 emissions as part of the OBD requirements in a future regulatory action.

Plug-in Hybrid Useful Life Indicator for the Battery

Honda commented that existing EPA regulations (40 CFR 86.1806-05(b)(8)(ii)) "require plug-in hybrid vehicles (PHEVs) to be equipped with a "useful life indicator for the battery" when the range deteriorates to less than 75 percent of its initial range. On the other hand, in the NPRM, EPA states: "EPA does not plan to require CO_2 emissions as one of the applicable standards required for the OBD monitoring threshold." Honda recommended that "EPA should take this opportunity to clarify its intent with respect to the PHEV useful life indicator."

EPA believes that it is too early in the development of PHEVs to address this issue at this time. We agree to work with the Industry and interested stakeholders (including the California Air Resources Board) to assess the need for this requirement. Should the need for such a device change, regulation changes may be warranted.

Service Information Availability

The GHG rule does not change EPA's service information regulations requiring manufacturers to make available any and all emissions-related information. EPA will continue to monitor the emissions-related service information that manufacturers make available to meet existing regulations. As part of EPA's continuing monitoring, the agency would consider whether any additional service information requirements are necessary as an indirect consequence of the promulgation of GHG standards

5.10.8. Miscellaneous Revisions to Existing Regulations

Organization: Alliance of Automobile Manufacturers (Alliance)

Comment:

Alliance of Automobile Manufacturers (Alliance):

Fuel Economy (FE) Data (Proposed regulations in 40 C.F.R. 600.113-08)

EPA has proposed to calculate FE based on deteriorated emission data. This proposal creates several issues:

EPA Response to Comments

• This is a fundamental change to the way FE has been calculated. All prior FE calculations and standards (gas guzzler, CAFE) have been based on emission data that has not been deteriorated.

• FE calculations include the following constituents depending on the type of fuel that is used; total hydrocarbons (HC), carbon monoxide (CO), methane (CH4), non-methane hydrocarbons (NMHC), methanol (CH3OH), formaldehyde (HCHO), ethanol (C2H5OH) and acetaldehyde (C2H4O). While some of these constituents currently have useful life standards and already have deterioration factors, some do not. Therefore, manufacturers may be required to rerun all forms of durability vehicle testing in order to establish DFs for these additional constituents.

• The use of deteriorated emission data contradicts the requirement to downward adjust FE values for test vehicles whose system miles have exceeded 6200 miles.

• This change will require significant changes to existing computer programs that were designed to calculate FE via the traditional method. [OAR-2009-0472-6952.1, pp.49-50]

Recommendation:

Because the current emission durability programs were designed to predict traditional emission deterioration and not the effects that vehicle aging may have on FE, the use of deteriorated emission data in the FE calculation can lead to false and/or inconsistent results based on the manufacturer's choice of durability program. Requiring the use of deteriorated data will penalize those manufacturers who choose to utilize a durability program that develops DFs versus "aged component" testing. When testing with aged components, the only components that are being aged are those that affect the current criteria pollutants. The dynamometer load on the vehicle does not change whether the vehicle is being tested with 4K or 120K aged components; therefore, the amount of fuel consumed during the test, theoretically, will not change. Because the same amount of fuel is being consumed, the increase in HC and CO emissions due to the use of deteriorated emission components is offset by a reduction in the emissions of CO2. So, with aged component testing the FE result will be the same as the result that is achieved on a low mileage test. On the other hand, if a manufacturer utilizes DFs, the HC and CO values will be deteriorated without a corresponding decrease in CO2, thereby penalizing the FE result. [OAR-2009-0472-6952.1, p.50]

Furthermore, EPA is on record stating that there is no reason to believe that CO2 emissions will show an increase as the vehicle ages as would be expected with criteria pollutants. Therefore, requiring manufacturers to measure and report in-use CO2 emissions that can be predicted from measurements made at vehicle certification would add unnecessary burden that offered little or no additional value. [OAR-2009-0472-6952.1, p.50]

In order to avoid these issues, the Alliance recommends that EPA remove the requirement to use deteriorated emission data in the carbon balance equations and retain the current method for calculating FE. [OAR-2009-0472-6952.1, p.50]

EPA Response:

Use of Deterioration Factors in Fuel Economy Calculations

EPA proposed to calculate CREE emissions based on deteriorated emissions data for the manufacturer's end-of-year CREE emission level and also to determine the in-use CREE emission standard which is applicable to each manufacturer's specific models. EPA did not intend to propose to calculate fuel economy based on deteriorated emissions data, however EPA proposed regulations (74 FR 49772, September 28, 2009) suggested otherwise, as follows:

> (g) Calculate separate FTP, highway, US06, SC03 and Cold temperature FTP fuel economy from the grams/mile values for total HC, CO, CO_2 and, where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC and CH_4, and the test fuel's specific gravity, carbon weight fraction, net heating value, and additionally for natural gas, the test fuel's composition.
>
> (1) If the emission values (obtained per paragraph (a) through (e) of this section, as applicable) were obtained from testing with aged exhaust emission control components as allowed under 86.1823-01, then these test values shall be used in the calculations of this section.
>
> (2) If the emission values (obtained per paragraph (a) through (e) of this section, as applicable) were not obtained from testing with aged exhaust emission control components as allowed under 86.1823-01, then these test values shall be adjusted by the appropriate deterioration factor determined according to 86.1823-01 before being used in the calculations of this section. [Emphasis added]

The Alliance recommended that "EPA remove the requirement to use deteriorated emission data in the carbon balance equations and retain the current method for calculating FE."

EPA has corrected this oversight in the final rule.

5.10.9. Warranty, Defect Reporting, and Other Emission-related Components Provisions

Organization: Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
State of New Jersey
Hyde, James (citizen)

Comment:

Alliance of Automobile Manufacturers:

Warranty Requirements

Emission warranty requirements are not appropriate for mobile air conditioners under the proposed rule, since in-use performance of the MAC system at levels comparable to a new

vehicle is not needed to achieve the emission levels targeted by EPA. [OAR-2009-0472-6952.1, p.28]

Warranty requirements were established for tailpipe pollutants, such as CO and NOx, because emissions of those pollutants would rise significantly if the pollution control devices, such as catalytic converters, fail. This would typically not be the case for MAC components. First, consider the case of indirect emissions from fuel consumed to power the MAC. In the vast majority of MAC failure modes, the system stops cooling and ceases operation -- either because the critical moving parts stop moving or because the system is switched off -- thereby actually reducing the indirect CO2 emissions. [OAR-2009-0472-6952.1, p.28]

Emission warranties should not be required in relation to the indirect MAC emissions. The most significant item in EPA's proposed warranty coverage, the compressor, can cost over $1,000 to replace. It seems paradoxical and disproportionate to impose such high costs in an emissions recall scenario to replace this component, and thereby actually increase indirect emissions. Although manufacturer warranties may typically already be longer than the two-year period proposed by EPA in this NPRM, in principle there is no sound basis for emission warranty coverage to safeguard indirect emission levels, since indirect emissions go down when the system fails. Finally, it is worth noting that proper functioning of these parts is not actually required to achieve the emissions levels set by EPA. [OAR-2009-0472-6952.1, p.28]

Regarding direct emissions of refrigerant, there is only a negligible environmental impact if refrigerants below a GWP of 150 are released from the system, even if the entire charge, typically between 1-2 pounds, is released. Therefore, emission warranty coverage of joints, hoses, seals, etc. is certainly not needed to protect the environmental gains from application of low-GWP refrigerants. While the ultimate costs of the new low-GWP refrigerants are not known with certainty, they are expected to be at a level that would severely discourage motorists from repeatedly recharging a system with significant unrepaired leaks (e.g., any cost of over $30 per pound). Therefore, there is no emission-based reason to mandate warranty coverage to prevent leaks on low-GWP systems, and the potential costs of an emission recall would be disproportionate to any environmental impact of leakage of these refrigerants. [OAR-2009-0472-6952.1, p.28]

Any emission warranty requirements should specifically exclude emission warranty coverage for systems using a refrigerant with a GWP below 150. This is consistent with EPA's position that no emissions warranty is required for zero emissions vehicles. [OAR-2009-0472-6952.1, p.28]

The sole remaining MAC environmental impact would be from refrigerant leakage in the current R-134a systems. Given the prospect for fairly rapid adoption of the low-GWP refrigerants in new vehicles during the time frame of this regulation, this would appear to be a very small basis on which to create an entirely new area of emissions warranty coverage and all the associated elements of an in-use program for air conditioners. EPA should not create a program of warranty coverage for MAC components in pursuit of such a small and temporary emissions impact. [OAR-2009-0472-6952.1, p.28]

Toyota:

Air Conditioning systems and related components have not previously been covered under the CAA emission warranty provisions. In recognition that the proposed A/C related CO2 emission standards are dependent upon the proper functioning of components on the A/C system, EPA proposes that the components of these systems be included under the CAA emission warranty provisions, with a warranty of 2 years / 24,000 miles. [OAR-2009-0472-7291, p.31]

Overall, Toyota believes that emission warranty requirements are not appropriate for mobile air conditioners under the proposed rule. Emission warranty requirements were established for tailpipe pollutants because emissions of those pollutants would rise significantly if the pollution control devices, such as catalytic converters would fail. This is not the case for MAC systems since in-use performance of the MAC system at levels comparable to that of a new vehicle is not needed to achieve the emission levels targeted by EPA. Additionally, Emission warranty for A/C systems is unnecessary because manufacturer warranties typically already are longer than the two-year period proposed by EPA in this NPRM. [OAR-2009-0472-7291, p.31]

With regards to direct emissions resulting from system leakage, there is only a negligible environmental impact if refrigerants below a GWP of 150 are released from the system. Therefore, emission warranty coverage of joints, hoses, seals, etc. would be unnecessary to protect the environmental gains from application of low-GWP refrigerants. Consequently, there would be no emission-based reason to mandate warranty coverage to prevent leaks on low-GWP systems, and the potential costs of an emission recall would be disproportionate. [OAR-2009-0472-7291, p.32]

State of New Jersey:

The Department supports the USEPA proposal to include components on the motor vehicle air conditioning system, such as rings, fittings, compressors, and hoses, under the Clean Air Act's section 207(a) emission warranty provisions. [OAR-2009-0472-7109.1, p.9]

Mr. James Hyde (citizen):

Warrantee Issues: CAA §207 addressed 'compliance of vehicles and engines in actual use'; and includes warranty provisions. Section 207(a) includes warrantee protection for vehicle owners against defects in 'parts, devices, or components designed for emission control. Section 207 (b) includes warrantee protection for vehicle owners against 'any penalty or other sanction' resulting from failing a emissions test due to a §207(a) warranted item. In the Preamble [po 243] EP A states that it is proposing to 'a number of components of the *AlC* system, such as rings, fittings, compressors, and hoses' be included under §207(a). Language to effect this, however, does not appear in the proposed regulatory changes. EPA also requests 'comment as to whether any other parts or components should be designates as 'emission related parts' subject to warranty and defect reporting provisions under this proposal.' [Preamble p. 244] [OAR-2009-0472-7258.1, pp. 3-4]

EPA Response:

Background Information

EPA Response to Comments

As outlined in the proposal, Section 207(a)(1) of the Clean Air Act (CAA) requires manufacturers to provide a design/defect warranty that warrants a vehicle is designed to comply with emission standards at the time of sale and will be free from defects that may cause noncompliance over the specified warranty period which is 2 years/24,000 miles (whichever is first) or, for major emission control components, 8 years/ 80,000 miles. The warranty covers parts of the emissions control system. The proposal explained that under the greenhouse gas rule, this coverage would include compliance with the proposed CO_2, CH_4, and N_2O standards. The proposal did not discuss the CAA Section 207(b) performance warranty.

EPA proposed to include air conditioning system components under the CAA section 207(a) emission warranty in cases where manufacturers use air conditioning leakage and efficiency credits to comply with the proposed fleet average CO_2 standards. The warranty period of 2 years/ 24,000 miles would apply. EPA requested comments as to whether any other parts or components should be designated as ''emission related parts'' and thus subject to warranty and defect reporting provisions under this proposal.

The Alliance of Automobile Manufacturers (Alliance), Toyota and the State of New Jersey provided comments. The State of New Jersey supported EPA's proposal to include motor vehicle air conditioning system components under the emission warranty provisions. Both the Alliance and Toyota commented that emission warranty requirements are not appropriate for mobile air conditioners because 1) in-use performance of the air conditioning system at levels comparable to a new vehicle is not needed to achieve the emission levels targeted by EPA and 2) manufacturer general warranties already cover air conditioning systems and are typically longer than the two-year/24,000 mile proposed emissions warranty period.

Regarding direct emissions (refrigerant leakage), the Alliance and Toyota commented that warranty requirements are unnecessary for refrigerants with a global warming potential (GWP) below 150 because the environmental impact is negligible even if refrigerants are released from the system. Regarding indirect emissions (fuel consumed to power the air conditioning system), the Alliance commented that EPA should not require warranty coverage of the air conditioning system because in the vast majority of air conditioning failure modes, the system stops cooling and ceases operation -- either because the critical moving parts stop moving or because the system is switched off -- thereby actually reducing the indirect CO_2 emissions.

EPA received no comments regarding 1) other parts or components which should be designated as ''emission related parts'' subject to warranty requirements, 2) defect reporting requirements, or 3) other requirements associated with warranty and defect reporting requirements (e.g., voluntary emission-related recall reporting requirements, performance warranty requirements, voluntary aftermarket parts certification requirements or tampering requirements.

Defect Warranty

The defect warranty requirements are provided in Section 207 of the Act. There are currently no defect warranty regulations. Congress provided under Section 207(a) of the CAA that emission-related components shall be covered under the 207(a) defect warranty for the warranty period outlined in section 207(i) of the CAA. For example, section 207(a) reads in part:

> "….the manufacturer of each new motor vehicle and new motor vehicle engine shall warrant to the ultimate purchaser and each subsequent purchaser that such vehicle or engine is (A) designed, built and equipped so as to conform at the time of sale with applicable regulations under section 202, and (B) free from defects in materials and workmanship which cause such vehicle or engine to fail to conform with applicable regulations for its useful life (as determined under sec. 202(d)). In the case of vehicles and engines manufactured in the model year 1995 and thereafter such warranty shall require that the vehicle or engine is free from any such defects for the warranty period provided under subsection (i)."

Section 207(i) reads in part:

> "(i) Warranty Period.---
>
> (1) In General.—For purposes of subsection (a)(1) and subsection (b), the warranty period, effective with respect to new light-duty trucks and new light-duty vehicles and engines, manufactured in model year 1995 and thereafter, shall be the first 2 years or 24,000 miles of use (whichever first occurs), except as provided in paragraph (2). For the purposes of subsection (a)(1) and subsection (b), for other vehicles and engines the warranty period shall be the period established by the Administrator by regulation (promulgated prior to the enactment of the Clean Air Act Amendments of 1990) for such purposes unless the Administrator subsequently modifies such regulation.
>
> (2) In the case of a specified major emission control component, the warranty period for new light-duty trucks and new light-duty vehicles manufactured in the model year 1995 and thereafter for purposes of subsection (a)(1) and subsection (b) shall be 8 years or 80,000 miles of use (whichever first occurs). As used in this paragraph, the term 'specified major emission control component' means only a catalytic converter, an electronic emissions control unit, and an onboard emissions diagnostic device, except that the Administrator may designate any other pollution control device or component as a specified major emission control component if---
>
> (A) the device or component was not in general use on vehicles and engines manufactured prior to the model year 1990; and (B) the Administrator determines that the retail cost (exclusive of installation costs) of such device or component exceeds $200 (in 1989 dollars, adjusted for inflation or deflation as calculated by the Administrator at the time of such determination….."

Thus, the CAA provides the basis of the warranty requirements contained in today's final rule, which will cover "emission related parts" necessary to provide compliance with CO_2, CH_4, and N_2O standards. Emission related parts would include those parts, systems, components and software installed for the specific purpose of controlling emissions or those components, systems, or elements of design which must function properly to assure continued vehicle emission compliance, including compliance with CO_2, CH_4, and N_2O standards; (similar to the

current definition of "emission related parts" provided in 40 CFR 85.2102(14) for performance warranty requirements). For example, today's action will extend defect warranty requirements to emission-related components on advanced technology vehicles such as cylinder deactivation components or batteries used in hybrid-electric vehicles.

Under today's rule, EPA will extend the defect warranty requirement to emission-related components necessary to meet CO_2, CH_4, and N_2O standards, including emission-related components which are used to obtain optional credits for 1) certification of advanced technology vehicles, 2) credits for reduction of air conditioning refrigerant leakage, 3) credits for improving air conditioning system efficiency, 4) credits for off-cycle CO_2 reducing technologies, and 5) optional early credits for 2009-2011 model year vehicles outlined in the provisions of 40 CFR 86.1867-12 (which are required to be reported to EPA after the 2011 model year).

Regarding the comments received by the Alliance and Toyota, that warranty coverage is not needed for air conditioning components, EPA believes that the Clean Air Act requires warranty coverage on components used to demonstrate compliance with the emission standards, including components used in the optional credit programs for reduction of air conditioning refrigerant leakage and air conditioning efficiency improvements. EPA does not have the discretion to forgo warranty requirements by regulation in today's final rule. Thus, the Agency is adopting defect warranty requirements for air conditioning components as proposed. At the same time, if a defect in materials or workmanship does not cause an increase in emissions, then there would not appear to be a breach of the warranty.

Effective date of warranty for components used to obtain Early Credits

Regarding the defect warranty for emission-related components used to obtain optional early credits for 2009-2011 vehicles, the defect warranty should provide coverage for these components at the time the early credits report is submitted to EPA (e.g., no later than 90 days after the end of the 2011 model year). For example, the defect warranty for early credit components does not have to apply retroactively (before the manufacturer declares the credits to EPA). The Agency believes this approach is reasonable, because 1) manufacturer's early credit plans may not be finalized until after vehicles have been produced; 2) manufacturers will be provided satisfactory lead time to provide warranty requirements to customers; and 3) the manufacturer's basic (bumper-to-bumper) warranty for air conditioning and other early credit components are typically longer than the two-year/24,000 mile proposed warranty period which will be applicable to most early credit components.).

Performance Warranty

EPA did not propose any changes to the current performance warranty requirements, because the performance warranty preconditions outlined in section 207(b) of the CAA have not been satisfied. For example, section 207(b) of the CAA comes into play if EPA issues performance warranty short test regulations and determines that there are inspection facilities available in the field to determine when vehicles do not comply with greenhouse gas emission standards. Once EPA issues performance warranty short test regulations, then the CAA performance warranty provisions require the manufacturer to pay for emission-related repairs if a vehicle is properly

maintained and used, and fails the short test and is required to repair the vehicle. Currently the provisions of 85.2207 and 85.2222 provide performance warranty short test (commonly called an inspection and maintenance or I/M test). The provisions of 85.2207 and 85.2222 provide an I/M test procedure and failure criteria based on an inspection of the onboard diagnostic (OBD) system of the vehicle. The OBD inspection procedure in 85.2222 is currently used in most areas of the country where I/M tests are required. For example, a vehicle fails the OBD test procedure outlined in 85.2222 if the vehicle's MIL is commanded to be "on" during the I/M test procedure.

Although most areas of the country which require I/M testing use the OBD test procedures outlined in 40 CFR 85.2207 and 85.2222, the NPRM did not propose that the OBD system would be required to monitor CO_2, CH_4 or N_2O emission performance, ref. 74 FR 49574 and 74 FR 49755. Therefore, the performance warranty preconditions in section 201(b) of the CAA are not currently in effect for greenhouse gas CO_2 emissions. The performance warranty continues to apply for criteria pollutants but does not apply for greenhouse emissions.

Defect Reporting and Voluntary Emission-related Recall Reporting Requirements

EPA did not propose any changes to the current defect reporting and voluntary emission-related recall reporting requirements outlined in the provisions of 40 CFR 85.1901-1909. Although EPA requested comments, we did not receive any comments on defect reporting and voluntary emission-related recall reporting requirements. Current regulations require manufacturers to submit a defect report to EPA whenever an emission-related defect exists in 25 or more in-use vehicles or engines of the same model year. The defect report is required to be submitted to EPA within 15 working days of the time the manufacturer become aware of that a defect affects 25 or more vehicles. Current regulations require manufacturers to submit to EPA voluntary emission-related recall reports within 15 working days of the date when owner notification begins.

Similar to the design/defect warranty requirements outlined above, the Agency believes that as proposed, defect reporting and voluntary emission-related recall reporting requirements would apply to emission-related components necessary to meet CO_2, CH_4, and N_2O standards for the useful life of the vehicle, including emission-related components which are used to obtain optional credits for 1) certification of advanced technology vehicles, 2) credits for reduction of air conditioning refrigerant leakage, 3) credits for improving air conditioning system efficiency, and 4) credits for off-cycle CO_2 reducing technologies, and 5) optional early credits for 2009-2011 model year vehicles outlined in the provisions of 40 CFR 86.1867-12 (which are required to be reported to EPA after the 2011 model year). For early credit components, defect reporting requirements and voluntary emission-related recall reporting requirements become effective at the time the early credits report is submitted to EPA (e.g., no later than 90 days after the end of the 2011 model year).

The final rule includes a minor clarification to the provisions of 40 CFR 85.1902 (b) and (d) to clarify that beginning with the 2012 model year, manufacturers are required to report emission-related defects and voluntary emission recalls to EPA, including emission-related defects and voluntary emission recalls related to greenhouse gas emissions (CH_4, N_2O and CO2).

5.10.10. Light Vehicles and Fuel Economy Labeling

EPA Response to Comments

Organization: General Motors
Ford Motor Company
Honda Motor Company
Association of International Automobile Manufacturers (AIAM)
Alliance of Automobile Manufacturers (Alliance)
Toyota Motor North America
Natural Resources Defense Council
International Council on Clean Transportation
National Automobile Dealers Association (NADA)
State of New Jersey
New York State Department of Environmental Conservation
Automotive Aftermarket Industry Association (AAIA); et.al
Fisker Automotive, Inc.
Chew, Yuli

Comments:

General Motors:

GM supports the use of individual fleet utility factors (per SAE J1711 draft procedures) for calculating the fuel economy label for advanced technology vehicles. In addition, GM supports inclusion of metric(s) on the Monroney label that are easily understandable and meaningful to the average consumer. In this regard, GM recently shared consumer clinic research with EPA staff that included the feedback on such consumption metrics as "gallons/100 miles" and "$/100 miles". The use of accurate metrics is imperative -- thus a metric like "mpge" where electricity is converted into an equivalent amount of gasoline, could lead to false expectations. We look forward to further discussion and plan detailed comments through the separate labeling rulemaking when it is proposed in the near future. [OAR-2009-0472-6953.1, p.30]

Ford Motor Company:

Advanced Technology Fuel Economy Labeling

Ford supports the development of new, fair, and consistent fuel economy labels for advanced technology vehicles, particularly for plug-in hybrids and electric vehicles. NHTSA requested comments on appropriate metrics for presenting fuel economy-related information on labels and whether a CO2e grams per mile metric should be considered to facilitate comparisons between conventional vehicles and alternative fuel vehicles. The fundamental purpose of these labels is to provide consumers a mechanism to compare the efficiency of vehicles and powertrains on a consistent basis that is understandable. There are many open issues to resolve in the process of developing a consumer-accepted label. Fuel consumption versus fuel economy has been studied through consumer focus groups at Ford and current indications are consumers are not ready or willing to consider fuel consumption as a metric at this time. However, the focus group results indicate that there is a significant value to providing energy information (both petroleum fuel and electrical energy) as separate metrics over standard operating conditions (energy consumed over a fixed distance, e.g., energy per mile, energy per 100 miles) because such metrics are linear.

Total cost to the consumer for both electrical and fuel energy on an annual basis, with standard mileage assumptions, and energy costs is also appropriate. For electric vehicles and plug-in hybrids, we support inclusion of the time and amount of kilowatt hours needed to recharge the battery system to a full state, based on standard household circuit systems (11 Ov/15amp). Options should be provided to include shorter charging times if the vehicle provides the capability.

Ford does not believe that EPA and NHTSA are constrained in providing customers the most informative labels because 'mpg information is currently required by law,' 49 USC § 32908(b)(1) mandates that 'a manufacturer of automobiles shall attach a label. .. containing ... '(A) the fuel economy of the automobile.' According to 49 USC § 32901, 'fuel economy' means the average number of miles traveled by an automobile for each gallon of gasoline (or equivalent amount of other fuel used, as determined by the Administrator under section 32904 (c) of this title' (emphasis added). 'Fuel' is defined in that same section as 'gasoline,' 'diesel oil,' or 'other liquid or gaseous fuel.' The definition of 'fuel' does not include electricity. 'Electricity' is, however, otherwise specifically included as one of the energy sources listed in the definition of an 'alternative fuel.' 49 U.S.C. § 32901 (a)(1)(J).

Therefore, a manufacturer must provide a label containing the fuel economy value for the vehicle, expressed as miles driven per gallon of 'fuel,' meaning per gallon of gasoline or an equivalent amount of diesel or other liquid or gaseous fuel. 49 U.S.C. 32901 (a)(1 0). Since electricity is not a 'fuel' but rather an alternative fuel, no energy efficiency rating is required for electricity under § 32908(b)(1)(A). Further, special energy efficiency labeling and information requirements apply for 'dedicated automobiles' and 'dual fuel automobiles' under § 32908(b)(3); however, even in these cases there is no mandate for an equivalent petroleum-based fuel economy (MPGe) metric. Hence, no specific statutory labeling requirement is driving the need for a MPGe value.

At the same time, the Administrator has authority to 'require or authorize' labeling of 'other information' 'related to the information required by clauses [32908(b)(1)](A)-(D) of this paragraph.' 49 U.S.C. § 32908(b)(1)(F). Therefore, EPA could implement either an electric consumption or electric economy metric.

Thus, Ford does not support the use of MPGe to describe the energy use of an electrically powered automobile or a plug-in hybrid electric vehicle and disagrees that EPCA, mandates a gasoline-equivalent MPGe fuel economy label value. In real-world application, MPGe does not translate into a metric that is understood by most consumers and therefore may be misleading by FTC standards and counterproductive to the acceptance of EV and PHEV technology.

If EPA nevertheless decides to pursue labeling that includes MPGe values, we suggest that EPA develop a plan to eventually sunset the MPGe value altogether. An example of an effective approach can be found in the 2007-2008 transition from 2-cycle to 5-cycle fuel economy values wherein labels contained both new and old values during a transition period, giving greater prominence to the new value. In this situation, we recommend that MPGe be shown in smaller print, as a reference point for the new metrics. Then, as the new metrics become accepted EPA

should plan to remove MPGe altogether. We expect that this transition of consumer acceptance will be quick given the limitations of MPGe to describe the performance of electric vehicles.

PHEVs present significant fuel economy labeling challenges because of their bimodal fuel economy nature. In other words, consumers are likely to experience very different fuel and electrical economy depending on how far they drive their vehicle before recharging and under given driving conditions. In addition, PHEV fuel consumption will likely change significantly once the electrical battery system has been depleted. Thus, at a minimum the electrical economy and the fuel economy of the vehicle should be included under its optimal driving state, typically referred to in standardized tests as charge depleting mode; and when the battery system has been depleted, typically referred in standardized tests as charge sustaining mode. PHEV label formats will be more complex by nature. This complexity can be described in three basic categories and labels can be modularly formatted to address three types: electric only, hybrid electric-fuel, and fuel only.

EVs will also present challenges because of their range and efficiency sensitivity to driving styles and climate conditions. Current range testing procedures used by CARB and EPA are in need of revision because they are conducted until the vehicle cannot operate properly, Le., until the vehicle can no longer maintain the driving schedule. Such an extreme end condition is not representative of actual vehicle usage because customers will not typically drive until '0' energy remains in the battery system nor until the vehicle can no longer function properly. More typically, vehicles will be driven to a fraction of the full range and recharged, and therefore a more reasonable and representative process is in order. Ford is willing to work with the agencies and industry to update and harmonize these procedures.

In the context of standardized testing, the effects of cold temperature (20F) and heater use are currently being studied by industry as a primary sensitivity factor in an electric vehicles energy efficiency performance, followed by NC load. A hot test temperature (95F) is not expected to have significant effect on battery system and vehicle performance.

In the coming years of EV use, consumer information and performance data needs to be captured, perhaps from early manufacturer and government fleet use, to help in determining appropriate label content for these vehicles. Work is underway within SAE to study these sensitivities and develop standard vehicle testing practices. Ford supports this work and encourages the EPA and other agencies to participate in studies as well help harmonize the potential requirements.

In addition, prior to the final label proposals, we recommend EPA work jointly with PHEV and EV manufacturers to test draft label concepts through focus groups and verify consumer preferences.

Utility Factors

For CAFE purposes, Ford supports a standardized fleet utility factor, one based on SAE J2841. EPA requested comment on how the utility factor is calculated and which data should be used to establish it. The fleet utility factor approach is reasonable when applied to a CAFE requirement,

since it represents a fleet-average driving approach. However, individual customers will see large variations in the performance of their vehicle's efficiency based on how much time they are in either charge-depleting or charge-sustaining mode. This could lead to customer dissatisfaction with a utility-factor derived label, as customers have no way of applying it to their own personal driving patterns. Due to these reasons, it is important to highlight the bimodal nature of PHEVs by showing charge-depleting information separate from charge sustaining on the label and not to focus on one type of average label value at this time.

For CAFE purposes, Ford supports a standardized utility factor, one based on SAE J2841. The agreed-upon utility factor should be limited in with respect to update frequency in order to provide adequate stability and lead time to facilitate cycle planning for manufacturers. For example, utility factors should be published by the EPA for applicable model years at least 1 to 2 model years in advance. Any further updates to the utility factor curves should be made only in future model years, not retro-active to current or previous model years. Since the fleet utility factor represents a national driving distribution, it should be relatively slow to change (barring any significant technology, energy, or infrastructure cost). Frequent updates to the utility factor will not be necessary. [OAR-2009-0472-7082.1, pp. 20-23]

Honda Motor Company:

Generally, Honda proposes that EPA and NHTSA apply the same procedures and logic as SAE standards and CARB regulations to avoid discrepancies. Also, Honda understands that EPA and NHTSA need to define some areas where SAE and ARB are silent – primarily Label issues, CAFE issues and GHG issues. [NHTSA-2009-0059-0095.1, p.12]

Utility Factor Weighting Methods

Honda proposes that Fleet Utility Factors in existing SAE J2841 should be used to combine Charge-Depleting and Charge-Sustaining modes for GHG and CAFE purposes. On the other hand, Honda also proposes that Individual Utility Factor in the upcoming SAE J2841 revision should be used to combine Charge-Depleting and Charge-Sustaining modes for Fuel Economy Labeling purposes. [NHTSA-2009-0059-0095.1, p.12]

The PHEV FE_{MPG} Formula Clarification

The PHEV FE_{MPG} formula in the preamble needs to be revised to more accurately describe the fuel economy from Charge Depleting and Charge Sustaining modes. We propose substituting FE_{CDi} for FE_i. Similarly, it is also clear that $FE_{gasoline}$ denotes the fuel economy during the Charge Sustaining mode, and hence FE_{CS} will clearly describe this to prevent potential confusion on gasoline consumption between Charge Depleting (in a blended PHEV) and Charge Sustaining modes. We propose substituting FE_{CS} for $FE_{gasoline}$. [NHTSA-2009-0059-0095.1, p.13]

Association of International Automobile Manufacturers (AIAM)

The proposed regulations seek comment on the potential use of metrics other than miles per gallon in consumer information regarding fuel efficiency. *See* preamble at 49576. Consumers

perceive in-use fuel economy performance, measured in "miles per gallon," to vary greatly for higher efficiency vehicles, although the actual variation in fuel consumption is not as significant. This perception issue can result in customer dissatisfaction. In addition, consumers need more significant and appropriate information for new technologies, such as plug-in hybrid (PHEV) and battery electric vehicles. In particular, PHEV fuel economy performance varies greatly depending on how the vehicle is used, potentially leading to customer misunderstanding. Therefore, a new consumer information label concept should be developed. AIAM would be pleased to work with EPA and NHTSA to develop consumer information requirements that include all appropriate information, are consumer friendly, and address greenhouse gas emissions as well as fuel efficiency matters. [OAR-2009-0472-7123.1, pp.18-19]

Alliance of Automobile Manufacturers (Alliance):

Fuel Economy Labeling of Advanced Technology Vehicles

Based on manufacturers' announcements, advanced technology vehicles such as plug-in electric hybrid vehicles and electric vehicles will be on the market very soon. Public acceptance and understanding is key to the success of these new technologies. It is imperative that manufacturers and EPA work together to appropriately promote the benefits that these vehicles can provide. To that end, the Alliance fully supports the agencies goals that for these advanced technology vehicles the "labels reflect sound science, treat technologies equitably and provide appropriate information to consumers." [OAR-2009-0472-6952.1, p.53]

To this end, the Alliance and its member companies have been working for over a year with EPA and the Society of Automotive Engineers to develop test procedures, calculation methodologies, metrics and formats. We are committed to continuing to work with the agency to produce the necessary frameworks for these various vehicles. [OAR-2009-0472-6952.1, p.53]

In this GHG/CAFE proposal, EPA seeks comments on issues surrounding consumer vehicle labeling in general, and labeling of advanced technology vehicles in particular. EPA further states that it will "initiate a separate rulemaking to explore in detail the information displayed on the fuel economy label and the methodology for deriving that information." [OAR-2009-0472-6952.1, p.53]

The Alliance supports the use of utility factors in creating the approach for calculating the label for these advanced technology vehicles (specifically individual fleet utility factors for the label per the recent SAE J1711 draft procedures). Further, the Alliance supports a metric on the Monroney label that is simple and understandable to the consumer. An esoteric metric that consumers have very little frame of reference for understanding will only slow – and may even harm -- the acceptance of advanced technologies. [OAR-2009-0472-6952.1, p.54]

Recommendation:

Unfortunately, this separate label rulemaking will not be complete before many products are ready for the market place. Important in this interim period will be the case-by-case approach that EPA will need to undertake to determine the label values for various vehicles. In this

process, EPA must be cognizant of maintaining a level playing field for all advanced technologies as well as providing consumers a way to compare to current conventional vehicles. [OAR-2009-0472-6952.1, p.54]

Toyota Motor North America:

Although EPA intends to initiate a separate rulemaking to explore in detail the information displayed on the fuel economy label of advanced technology vehicles, and the methodology to be used for deriving the information, EPA requests comment on these issues as part of the subject proposal. [OAR-2009-0472-7291, p.33]

With the increasing numbers of advanced technology vehicles beginning to be sold, Toyota supports EPA's continued efforts to address potential issues associated with these technologies, including how best to provide relevant consumer information about their environmental impact, energy consumption, and cost. Toyota believes that providing accurate information is necessary to promote customer acceptance and satisfaction of these advanced technology vehicles. Toyota is concerned that unrealistic or difficult to understand ratings could set up unrealistic expectations that could sour the market introduction of these advanced technology vehicles. [OAR-2009-0472-7291, pp.33-34]

One way to encourage consumers to take a more proactive approach to reducing greenhouse gases and oil consumption is to provide clear information about consumption, rather than efficiency, as part of EPA's new labeling rule initiative. For liquid fueled vehicles, the fuel consumption metric would communicate to the consumer a direct measure of the amount of fuel/energy used and thus directly relates to costs that consumers incur when filling up. Toyota recognizes EPA's previous reluctance to change to a more accurate fuel consumption metric because of the consumer's unfamiliarity with such a metric. However, the current MPG measure continues to be misleading and a fuel consumption metric could be more meaningful to consumers, once the consumers have been familiarized with the different metric. To help educate the consumer, Toyota proposes that EPA consider using both for the short term either on the website or in the fuel economy guide. [OAR-2009-0472-7291, p.34]

Another approach would provide more detailed information on the label specific to operation on gasoline and to operation on electricity. As an example, a hybrid vehicle label would contain gasoline consumption, the plug-in hybrid vehicle label would contain both gasoline consumption and energy consumption (miles per kilowatt-hour), and the electric vehicle would only show electricity consumption. To avoid confusion to the customer, the electric and fuel consumption values could be displayed separately. [OAR-2009-0472-7291, p.34]

Toyota supports the concept of using a utility factor approach as an appropriate methodology to predict/account for the total distance driven in each of the two PHEV modes (i .e. charge depleting and charge sustaining) and calculate fuel economy, including the use of 'fleet' utility factors as currently specified in the most recent SAE J2841 procedure/document . We plan to continue working with EPA and the Society of Automotive Engineers on these test procedures, calculation methodologies, metrics and format issues as one possible approach. [OAR-2009-0472-7291, p.34]

Toyota is currently evaluating all these options. Regardless of the approach ultimately taken by EPA, the label should balance the need for information specific to a given technology with the need for information that can be compared against other vehicles in the marketplace, and at the same time can be understood by consumers. [OAR-2009-0472-7291, p.34]

Natural Resources Defense Council:

Vehicle Labels Should Emphasize GHG Emissions Performance, Fuel Consumption and Operational Costs to Enable Easy Comparisons across Vehicle Classes and Technologies: EPA should update, through a public process, the environmental performance and fuel economy labels on new vehicles. Changes to the labels and associated calculation methodologies should also be reflected in other public education and consumer purchase guides such as the EPA Green Vehicle Guide (www.epa.gov/greenvehicles) and the EPA/DOE Fuel Economy Guide (www.fueleconomy.gov). In the NPRM, EPA states that it "plans to seek comment and engage in extensive public debate about fuel consumption and other appropriate consumer information metrics as part of a new labeling rule initiative." NRDC supports such an initiative and urges EPA to act expeditiously to complete the process in advance of MY 2012. [OAR-2009-0472-7141.1, p. 21]

The scope of today's new vehicle labels should be expanded to include GHG emissions. Consumer awareness of global warming pollution and its implications for climate change have grown dramatically in recent years and the GHG emissions should be displayed prominently on the vehicle in terms of GHG emissions per mile of real-world driving. Since EPA plans to continue to use the 2-cycle FTP for vehicle compliance measurements for MY 2012-2016, the EPA label value should be the compliance value adjusted to reflect typical driving conditions (so-called "5-cycle test"), as is currently done for fuel economy labeling. [OAR-2009-0472-7141.1, p. 21] [See OAR-2009-0472-7141.1, pp. 21-23 for further discussion of this issue.]

In sum, NRDC believes a trio of metrics including GHG emissions (in gCO2 per mile), fuel consumption (in gallons or kWh per 100 miles) and costs (in $ per mile or $ per year) should be displayed with prominence on new vehicle labels. [OAR-2009-0472-7141.1, p. 23]

International Council on Clean Transportation:

The agencies asked for comments on how to present efficiency information for electric vehicles. The current metric, miles per gallon (mpg), does not apply to electricity use for battery-electric vehicles and plug-in vehicles. Thus, the electricity use must be converted into an equivalent number of gallons or a different metric must be used.

ICCT believes this is an opportunity to start supplementing the use of mpg with a better metric. Not only does mpg not work for electricity consumption, but it is also not appropriate for conventional vehicles as it is a non-linear metric. The linear metric is gallons per mile. MPG is the inverse and distorts the relationship between the rating and the amount of fuel used. The higher the mpg rating, the greater the distortion.

Any linear metric would work better, such as gallons per 100 miles, liters per 100 km, BTU (or kWh) per mile, grams CO2 per mile, or $ per mile. The latter three suggestions would also solve the problem with comparing electricity use to gasoline use. Grams CO2 per mile has the additional benefit of treating vehicles and fuels together on a consistent basis.

Canada's experience could provide a valuable guide in how to change the labeling system. Canada added liters per 100 km to their fuel consumption guide, in addition to mpg, many years ago. Such a dual labeling system would be an excellent way to supplement the use of mpg with a better metric and would allow electric vehicles to be compared using the alternative metric. [OAR-2009-0472-7156.1, p.14]

[ICCT also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 62-63.]

National Automobile Dealers Association (NADA):

Dealers have significant point-of-sale purchasing decision expertise and NADA often has provided suggestions on appropriate strategies and language for fuel economy and other vehicle labels. The National Program should clarify that prospective changes to the existing, Monroney based fuel economy label will be made pursuant to a separate well thought out rulemaking. Note that the motoring public only recently became accustomed to extensive changes to the fuel economy label and its values, and to extensive changes to NHTSA's safety label. With NHTSA soon to begin implementing further changes to its safety label, prospective changes to the fuel economy label should be carefully coordinated so as to avoid undue confusion for consumers. [OAR-2009-0472-7182.1, p. 8]

State of New Jersey:

The Department supports the Agencies' efforts to supply additional information to the consumer regarding environmental impacts, energy consumption, cost, range per charge, time to charge, etc. so that consumer can make informed decision before purchasing a vehicle. The label should include a numerical rating and graph-type comparison for each vehicle's environmental impact in relation to other vehicles in the same class and include ratings for both criteria pollutants. [OAR-2009-0472-7109.1, p.9]

Automotive Aftermarket Industry Association (AAIA); et.al:

The aftermarket also strongly urges the agency to include a public education component not only for car owners to make good choices on vehicles, but also to provide information so that once they own these vehicles that they can maintain them. The aftermarket groups listed below would be more than willing to work with the agency to develop such an education program. In fact, much of this information is already on our Be Car Care Aware site www.carcare.org which is widely accessed by car owners. [OAR-2009-0472-7057.1, p.4]

New York State Department of Environmental Conservation:

CAFE and Greenhouse Gas Emission Labels
Much of what is currently included on a vehicle's fuel economy label is mandated by statute. We believe that replacing 'miles per gallon' with a metric similar to Europe's liters per 100 kilometers (or gallons per 100 miles) would be desirable in the long run; but it may require statutory changes. [OAR-2009-0472-7454, p.6]

Specifically for greenhouse gas emissions labeling, we recommend that the following should be supplied in grams per mile:
- The standard the vehicle -is certified to (for example is an all-wheel-drive sedan a passenger car or light truck?),
- The footprint based target emissions rate for the vehicle,
- The actual measured emissions rate for the vehicle,
- The greenhouse gas emission rates used in manufacturers' compliance reporting,
- Any credits (air conditioning, alternative fuel, FFV, etc) applicable to the vehicle. [OAR-2009-0472-7454, p.6]

The CAFE rating, in miles per gallon, used in. manufacturers' compliance reporting should also be presented on the label. [OAR-2009-0472-7454, p.6]

Fisker Automotive, Inc.:

Fisker Automotive recommends a technology-neutral fuel economy label, as shown below. We also propose an interim label solution for ease of transition. See the attached presentation, Fuel Economy Labeling, 2011 & Beyond for more. [OAR-2009-0472-8732.1, p.6] [[See Docket Number OAR-2009-0472-8732.1, pp.8-41 for the attached presentation]]

Yuli Chew (private citizen):

I support EPA's efforts to supply additional information to the consumer about their environmental impact, energy consumption, cost, range per charge, time to charge, etc. so that consumer can make informed decision before purchasing a vehicle. Hopefully, this can build on CARB's Environmental Performance Label Regulation. [OAR-2009-0472-7042.1, p.5]

EPA Response:

EPA received considerable public input in response to the request for comment in the proposal. Since the greenhouse gas rule was proposed in September, 2009, EPA has initiated a separate rulemaking to explore in detail the information displayed on the fuel economy label and the methodology for deriving that information. The purpose of the vehicle labeling rulemaking is to ensure that American consumers continue to have the most accurate, meaningful, and useful information available to them when purchasing new vehicles, and that the information is presented to them in clear and understandable terms.

EPA will consider all vehicle labeling comments received in response to the greenhouse gas proposal in its development of the new labeling rule in coming months. We encourage the

interested public to stay engaged and continue to provide input on this issue in the context of the vehicle labeling rulemaking.

5.11. EPA Estimates of GHG Emissions Reductions and Their Associated Effects

5.11.1 Impact on GHG Emissions

No substantive comments were received concerning the methodology used for calculating the greenhouse gas impacts of the program.

5.11.2 Climate Change Impacts from GHG Emissions

Organization: Environment New Jersey

Comment:

A commenter indicates light-duty vehicles account for about 40 percent of all U.S. oil consumption and when taken with the impacts of global warming which Steve Flint of the Mobile Sources and Fuels Committee of the National Association of Clean Air Agencies (NACAA)] mentioned, and the groundbreaking study from the IPCC in 2007, it's important to emphasize that not only is the science on effects of climate change becoming more dire, but implications for this country over the course of the next few decades and ultimately leading into the later part of the next century if we do not take action, or if we remain on the status quo. [EPA-HQ-OAR-2009-0472-4621, p.71]

The commenter indicates there is a lot of reason to be optimistic because of the solutions that are happening right now in this country. The commenter indicates the actions in the U.S. Congress with the U.S. House and now the U.S. Senate on the American Clean Energy and Security Act really are moving us forward, talking about clean energy solutions, finally putting a cap on global warming pollution, that is where the rest of the world has been moving to, it is where America must move to. [EPA-HQ-OAR-2009-0472-4621, p.74]

EPA Response:

EPA agrees with the commenter's assertion that this action is an important step towards curbing steady growth of GHG emissions from cars and light trucks. In the absence of control, GHG emissions worldwide and in the U.S. are projected to continue to grow. As provided in Section III.F.1 of the preamble to the final rule, U.S. GHGs are estimated to make up roughly 17 percent of total worldwide emissions in 2010, and the contribution of direct emissions from cars and light-trucks to this U.S. share is growing over time, reaching an estimated 19 percent of U.S. emissions by 2030 in the absence of control. This steady rise in GHG emissions is associated with numerous adverse impacts on human health, food and agriculture, air quality, and water and forestry resources.

Policy options for reducing GHGs (e.g., cap and trade) are not within the scope of this rulemaking nor does EPA propose any reduction strategies other than those associated with this rule pursuant to Section 202(a) of the Clean Air Act.
Organization: New York State Department of Environmental Conservation

Comment:

A commenter indicates that New York State hospitalization and mortality rates due to respiratory illnesses currently exceed the national average and this will only get worse as the planet continues to warm. The comment further notes New York's agricultural industry is likely to be affected by shorter growing systems for cold weather crops and eventually a different crop mix and thus affect New York's tourism and maple syrup industries. The commenter notes global warming also poses a significant threat to critical water sources in New York and the combination of higher temperatures and more erratic landfill will lower water levels and will adversely affect drinking water supplies, power generation, commerce, and recreational activities. New York State hospitalization and mortality rates due to respiratory illnesses currently exceed the national average and this will only get worse as the planet continues to warm. [These comments were submitted as testimony at the New York public hearing. EPA-HQ-OAR-2009-0472-4621, pp. 12-13]

EPA Response:

EPA finds the comments provided on impacts to human health and public welfare are generally consistent with those provided in preamble Section III.F.2, Climate Change Impacts from GHGs, to this final rule. Section III.F.2 discusses the projected impacts associated with climate change and warming temperatures as synthesized from the major scientific assessment reports. As indicated in Section III.F.2, "Increases in regional ozone pollution relative to ozone levels without climate change are expected due to higher temperatures and weaker circulation in the United States and other world cities relative to air quality levels without climate change. Climate change is expected to increase regional ozone pollution, with associated risks in respiratory illnesses and premature death. In addition to human health effects, tropospheric ozone has significant adverse effects on crop yields, pasture and forest growth, and species composition. The directional effect of climate change on ambient particulate matter levels remains uncertain."

Please see preamble Section III.F.2 of the rule for a synthesis of key findings regarding observed and projected changes in GHG emissions and associated climate change impacts. The key findings synthesized in Section III.F.2 are primarily drawn from the major scientific assessment reports of the Intergovernmental Panel on Climate Change (IPCC), the U.S. Climate Change Science Program (CCSP), the U.S. Global Change Research Program (USGCRP), and the National Research Council (NRC).
Organization: State of New Jersey

Comment:

A commenter indicates that as we are well aware, there is broad scientific consensus that human-caused greenhouse gas emissions are impacting the earth's climate, and that increasing

atmospheric concentrations of greenhouse gases will result in a very significant adverse global, regional and local environmental impacts. The commenter notes the northeastern states are particularly vulnerable to the impacts of climate change with potentially devastating ecological, economic and public health impacts to New Jersey. The commenter states "Not only does climate change threaten New Jersey's shoreline and ecology, but the socioeconomic impacts of climate change stand to be profound and costly." The commenter asserts that because of New Jersey's unique diverse terrain, nearly all of the impacts of climate change, such as rising temperature in our urban areas, sea level rise jeopardizing our coastal ecosystems and threats to our unique agricultural industries will be experienced throughout the state. The commenter asserts it is critical that the world, the nation, the region and New Jersey take immediate and aggressive action to stabilize and then reduce atmospheric greenhouse gas concentrations in order to avoid the most catastrophic impacts of climate change. The commenter states, "The successful reduction of ozone depleting substances throughout the nation and the world demonstrates that it can be done." [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621]

EPA Response:

EPA agrees with the commenter's assertion that there is broad scientific consensus that human-caused GHG emissions are impacting the Earth's climate. In addition, EPA notes the comments regarding climate change impacts to the Northeast are generally consistent with those provided in Section III.F.2 of the preamble to this final rule. Section III.F.2 provides a summary of observed and projected changes in GHG emissions and associated climate change impacts based on the key findings of Technical Support Document (TSD)[36] for EPA's Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) the Clean Air Act.[37] The key findings synthesized here and the information throughout the TSD source document are primarily drawn from the broad scientific community in the form of assessment reports of the Intergovernmental Panel on Climate Change (IPCC), the U.S. Climate Change Science Program (CCSP), the U.S. Global Change Research Program (USGCRP), and the National Research Council (NRC).

In particular, the USGCRP provides present and future impacts of climate change on the different regions of the United States in a recent national assessment report entitled *Global Climate Change Impacts in the United States*.[38] This report is a key source document for the TSD associated with EPA's Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act and is referenced in Section III.F.2 of the preamble to this rule. In regard to the Northeast Karl et al (2009) reports: "The densely populated coasts of the Northeast are particularly vulnerable to sea level rise, which is projected to rise more than the global average and increase the frequency and severity of damaging storm surges, coastal flooding, and related impacts like erosion, property damage, and loss of wetlands.

[36] "Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" Docket: EPA-HQ-OAR-2009-0472-11292
[37] See 74 FR 66496 (Dec. 15, 2009)
[38] Karl, T., J. Melillo, and T. Peterson (Eds.) (2009) Global Climate Change Impacts in the United States. Cambridge University Press, Cambridge, United Kingdom.

New York State alone has more than $2.3 trillion in insured coastal property, but some major insurance companies are beginning to withdraw coverage in coastal areas of the Northeast, including New York City. A coastal flood in New York City currently considered a once-in-a-century event (also known as a 100-year flood) is projected to occur every 10 to 22 years on average by late this century, depending on a higher or lower emissions scenario." EPA acknowledges that the Northeast has diverse terrain and climatic conditions and thus the projected effects from climate change are likely to be varied. As noted in Section III.F.2, climate change impacts will vary in nature and magnitude across different regions of the United States.

5.11.3. Changes in Global Mean Temperature and Sea-level Rise Associated with the GHG Emissions Reductions

Organization: Institute for Energy Research

Comment:

A commenter indicates it is quite possible that EPA's estimate of the reduction in temperature and sea level rise is an overestimate. The estimate is predicated on a climate sensitivity in the range of 2°C to 4.5°C in accord with the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (AR4) 2007. However, actual temperature trends after the release of that report and more recent science provide some reasons to believe that a climate sensitivity of 2°C to 4.5°C may be overly sensitive. [OAR-2009-0472-7225.1, p.6]

EPA Response:

EPA acknowledges the large uncertainty range associated with equilibrium climate sensitivity. EPA notes that support of the current consensus range or likely range (2-4.5°C) comes from many different lines of evidence, the ranges of which are consistent within the uncertainties, relatively robust towards methodological assumptions and similar for different types and generations of models[39]. In addition, the IPCC[40,41] indicates the levels of understanding and confidence in quantitative estimates of equilibrium climate sensitivity have increased substantially and there is increased confidence of key processes that are important to climate sensitivity due to improved comparisons of models to one another and to observations. Thus,

[39] Knutti, R. and G. Hegerl (2008). "The equilibrium sensitivity of the Earth's temperature to radiation changes." Nature Geoscience 1: 735-743.

[40] Solomon, S., D. Qin, M. Manning, R.B. Alley, T. Berntsen, N.L. Bindoff, Z. Chen, A. Chidthaisong, J.M. Gregory, G.C. Hegerl, M. Heimann, B. Hewitson, B.J. Hoskins, F. Joos, J. Jouzel, V. Kattsov, U. Lohmann, T. Matsuno, M. Molina, N. Nicholls, J. Overpeck, G. Raga, V. Ramaswamy, J. Ren, M. Rusticucci, R. Somerville, T.F. Stocker, P. Whetton, R.A. Wood and D. Wratt (2007) Technical Summary. In: *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[41] Meehl, G.A. et al. (2007) Global Climate Projections. In: *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

EPA concludes that the use of the climate sensitivity range for the climate analysis for this rule is appropriate and supported by the scientific literature from the major assessment reports.

In order to capture some of the uncertainty in the climate system, the changes in projected temperatures and sea level for this rule were estimated across the most current IPCC range of climate sensitivities, 1.5°C to 6.0°C. For each climate indicator analyzed the direction of change was the same across the range of climate sensitivities. EPA disagrees with the commenter that recent temperature trends after IPCC's AR4 2007 report provide adequate reason to believe that the climate sensitivity range of 2°C to 4.5°C is overly sensitive. Three years of additional temperature data are not likely to be sufficient to materially change estimates of climate sensitivity based on the instrumental record and has no impact on estimates of climate sensitivity based on paleoclimate analysis or other methods. Further, we note the commenter does not provide any references or material from the recent scientific literature to support this claim.

Organization: Shaw, Donald F.

Comment:

A commenter asserts that the claimed benefit (reduction) of 0.007 to 0.016 degrees Celsius (°C) in global mean temperature over 90 years is minuscule when compared to the inaccuracies of temperature measurement and uncertainties involved in climate science. The commenter continues to indicate that such small temperature numbers are immeasurable and meaningless as none of the equipment used to measure the temperatures can attain accuracy even within an order of magnitude of the claimed benefit. The commenter further notes the temperature records derived from thermometers and tree rings used by those who support global warming claims are nowhere near that accurate. In addition, the commenter asserts this same issue applies for the proposed reduction in sea level rise which is 0.06–0.15 centimeters (less than 1/16th of an inch). [OAR-2009-0472-7270.1, p. 1]

EPA Response:

EPA notes the projected reductions in global mean temperature and sea level from the rule are based on climate modeling analysis using a global emission reference scenario (no climate policy) and emissions reductions scenario which were subtracted from the reference scenario for the years 2000-2100 based on implementation of the rule as provided in Section III.F.1. This approach attempts to evaluate the impact of the rule's emissions reductions in the context of global GHG emissions. The results of the analysis should not be interpreted as detectable changes such as from the instrumental or observational records but discernible as quantifiable estimates calculated from the two emissions scenarios across a range of climate sensitivities. The observational record for global mean temperature (and sea level rise) is likely not sensitive enough to detect the direct response from any single mitigation action -- particularly a subset of emissions from a source category -- for several reasons (e.g., the inertia in the climate system due to the exchange of heat and energy between the atmosphere and the ocean, longevity (several decades) of perturbation from GHG emissions, global nature of the emissions problem where no single source dominates). Further, the instrumental record is not designed to detect such isolated signals. Although the commenter is correct that these relatively small changes in climate

variables would not be measurable with instrumentation or with observational evidence (e.g., tree-ring data), it does not preclude them from being valid in terms of demonstrating the directional changes resulting from the reduction in GHG emissions,

Organization: Institute for Energy Research
Shaw, Donald F.
Spurgeon, C. M.
Devon Energy Corporation
Wood, John S.
Stanton, Neil
Mass Comment Campaign

Comment:

A commenter indicates the proposed rule to regulate greenhouse gas emissions from light-duty vehicles, as well as EPA's proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, and *Massachusetts v. EPA,* 549 U.S. 497, 525 (2007) are all predicated on the assumption that regulating greenhouse gas emissions from light-duty vehicles will reduce the impacts of climate change. The commenter asserts that according to this proposed rule the climatic benefits from reducing greenhouse gas emissions from light-duty vehicles are very small and therefore will not affect climate change in any meaningful way.

Another commenter indicates that considering the minuscule benefit over a 90 year period, the benefit of prematurely invoking the miles per gallon (mpg) standards is even less significant. The commenter asks, "What is the net loss over 90 years if the regulation is postponed 10 years past the 2016 date?" The commenter asserts that it is clear that the objective is not science but giving an appearance of doing something. The commenter further indicates that these minuscule benefits will be offset many times by the massive increase in CO2 emissions by China and India and unilateral action is futile.
Another commenter indicates that EPA is proposing to increase the price of automobiles by $1,100 per car (74 Fed. Reg. 49460) in exchange for a projected global temperature decrease of 16 thousandths of a degree Celsius in 90 years. The commenter continues to indicate that according to EPA, sea level is projected to change by at most 1.5 millimeters. The commenter asserts these tiny amounts are so inconsequential that they will not affect global climate at all nor will they affect "public health and welfare."

EPA Response:

Climate change is a global phenomenon and EPA recognizes that this one national action alone will not prevent it. Importantly, EPA quantitatively analyzes the potential climate benefits of this rule which has the potential to substantially reduce GHGs emissions from the transportation sector, specifically light duty vehicles. The changes in climate effects that the rule is projected to produce – average of 2.9 ppm of CO_2, a few hundredths of a degree Celsius difference in global mean temperature, and 1 to 2 millimeters of sea-level rise, a small increase in ocean pH – are small. However, EPA notes this would be true for any given GHG mitigation action when taken

alone. Although the magnitude of the avoided climate change projected here is small, it shows a clear directional signal across all climate sensitivities evaluated. The benefits of GHG emissions reductions can be characterized both qualitatively and quantitatively, some of which can be monetized (see Chapter 7.5 of the final RIA).

EPA disagrees with the commenter's assertion that there is little consequence of waiting 10 years after 2016 to enact regulations given the small magnitude of climate benefits estimated for the rule. EPA notes a common misunderstanding is that the risks from climate change can be quickly addressed by emission reductions and thereby counter negative effects within a few years or decades. However, because of the longevity of atmospheric GHG gases warming effects persist over long timescales and continued and future emissions would imply further long-term climate-related effects on the planet[42]. As a substantial portion of CO_2 emitted into the atmosphere is not removed by natural processes for millennia, each unit of CO_2 not emitted into the atmosphere avoids essentially permanent climate change on centennial time scales. The value of EPA's analysis is not intended to diminish the effectiveness of the rule's effect on global climate conditions but to estimate the benefits of this particular action in reducing GHG emissions and global warming impacts by quantifying these potential reductions using the best available science.

EPA does not agree with the view that since other countries (e.g., China and India) have higher growth rates of greenhouse gas emissions that the EPA should not act now. Further, EPA does not agree with the commenter that reducing greenhouse gases in the U.S. will have no effect on global GHG emissions. As indicated in Section III.F of the rule, the U.S. transportation sector is the second largest contributor to this nation's greenhouse gas emissions behind only the electricity sector. Transportation sources under Section 202(a)[43] of the Clean Air Act (passenger cars, light duty trucks, other trucks and buses, motorcycles, and passenger cooling) represent 23% of total U.S. GHG emissions in 2007 and 4.3% of total global GHG emissions. Moreover, section 202(a) GHG emissions are a significantly larger share of global transport GHG emissions (28.0%) than the corresponding share of all U.S. GHG emissions to the global total (18.4%), reflecting the relative size of the transport sector in the United States compared to the global average. As the Supreme Court noted, ''[j]udged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, * * * to global warming.'' Massachusetts v. EPA, 549 U.S. 497, 525 (2007).

EPA's rule takes many factors into consideration, and is not premised on the view that the reductions from this rule will themselves have significant impacts on the global climate. As discussed above, no one action will have that effect. The factors EPA takes into account include its legal obligation to set emissions standards applicable to vehicular GHG emissions, given the endangerment and cause or contribute findings made by EPA, its analysis of available technology, the cost of the technology, the fuel savings that will result from the standard, the

[42] Solomon, S., G.-K. Plattner, et al. (2009). "Irreversible climate change due to carbon dioxide emissions." Proceedings of the National Academy of Sciences 106: 1704-1709.

[43] Source categories under Section 202(a) of the Clean Air Act are a subset of source categories considered in the transportation sector and do not include emissions from non-highway sources such as boats, rail, aircraft, agricultural equipment, construction/mining equipment, and other off-road equipment.

greenhouse gas reductions, implications for vehicle safety, consideration of the rule's costs in relation to benefits, and other impacts. EPA has considered a wide variety of factors in determining that its GHG emissions standards are a reasonable exercise of its authority under section 202(a) (1). The impact of these reductions on climate change is but one of the factors EPA considered.

Organization: Eadie, R. Frank

Comment:

A commenter indicates there are new scientific procedures that actually allow scientists to track both the CO_2 levels and climate indicators such as sea levels going back millions of years instead of hundreds of thousands of years. The commenter indicates that it is known that sea level is rising and will likely accelerate based on projections. New studies that have been done with the models indicate that the standards that IPCC used in their projections in 2006 are actually beyond the level of the worst case scenario that the IPCC had projected. The commenter indicates that instead of 2 °C change between now and the end of the century it may be 4 °C change by the end of the century. The commenter indicates that all the scientists agree that a warming of four degrees centigrade is simply unacceptable and civilization as we know it will not exist under those conditions. [EPA-HQ-OAR-2009-0472-4621, p.172-175]

EPA Response:

EPA acknowledges that the risks and impacts of climate change are occurring now and will continue to increase over this century and that sea level is projected to rise when compared to the previous century. As summarized in the Technical Support Document[44] of EPA's Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act,[45] the IPCC reports that by the end of the century (2090-2099), sea level is projected to rise by 18 and 59 cm relative to the base period (1980-1999). The IPCC projections contain the lowest and highest projections of the 5 to 95% ranges for all Special Report on Emission Scenarios (SRES) reference emission scenarios and include neither uncertainty in carbon cycle feedbacks nor rapid dynamical changes in ice sheet flow. The projections represent a 'likely range' which inherently allows for the possibility that the actual rise may be higher or lower.

Recent observations and studies from the scientific assessment literature suggest that sea level rise is likely to be near or above the high end of the IPCC estimates. For example, according to the Climate Change Science Programs[46] studies have suggested that a global sea level rise of 1 m (and up to 1.4 m) is plausible within this century if increased melting of ice sheets in Greenland

[44] "Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" Docket: EPA-HQ-OAR-2009-0472-11292
[45] See 74 FR 66496 (Dec. 15, 2009)
[46] CCSP (2009) *Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region.* A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. [James G. Titus (Coordinating Lead Author), K. Eric Anderson, Donald R. Cahoon, Dean B. Gesch, Stephen K. Gill, Benjamin T. Gutierrez, E. Robert Thieler, and S. Jeffress Williams (Lead Authors)], U.S. Environmental Protection Agency, Washington DC, USA, 320 pp.

and Antarctica is added to the factors included in the IPCC estimates. The IPCC[47] notes "dynamic processes related to ice flow not included in current models but suggested by recent observations could increase the vulnerability of the ice sheets to warming, increasing future sea level rise." In addition, the Climate Change Science Program (CCSP)[48], finds that the Greenland and West Antarctic ice sheets show acceleration of flow and thinning, and that inclusion of these processes in models will likely lead to sea level projections for the end of the 21st century that substantially exceed the projections presented in the IPCC Fourth Assessment Report (2007).

Importantly, EPA notes that the underlying scientific literature does not include predictions of conditions where civilization cannot exist but rather, will likely face challenges from climate change and sea level rise. In addition, these are global projections and climate change impacts will vary in nature and magnitude across different regions of the United States.

Organization: Environment New Jersey
New York State Department of Environmental Conservation

Comment:

Environment New Jersey

A commenter indicates that predictions of a two to four foot sea level rise in New Jersey are incredibly dire. The commenter notes that in New Jersey the Meadowlands, which include such landmarks as New Jersey Turnpike, the Newark Airport and Giants Stadium, all are within floodplain mapping zones for storm surges. The commenter further notes that several New York financial firms in Hudson County are on the line of the submerging and storm surge lines. The commenter indicates that the 27 miles of coast of New Jersey is the lion's share of our tourism industry, a $38 billion industry for the state, as well as home to casinos and Atlantic City. The commenter indicates that most of New Jersey's shore would suffer from storm surge on an unprecedented level and the estimates on real estate damage and loss are astronomical. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p.73]

New York State Department of Environmental Conservation

Another commenter indicates that sea level rise along New York State's coastal areas will erode beaches, damage sensitive ecosystems and cause billions of dollars in flood damage to vital infrastructure. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 12]

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[47] Meehl, G.A. et al. (2007) Global Climate Projections. In: *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[48] Clark, P.U., A.J. Weaver, E. Brook, E.R. Cook, T.L. Delworth, and K. Steffen (2008) Executive Summary. In: *Abrupt Climate Change*. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, pp. 7–18.

EPA Response:

EPA acknowledges the commenters' concerns regarding sea-level rise for the States of New Jersey and New York and note they are generally consistent with the overview of climate change impacts provided in this rule (preamble Section III.F.2). Section III.F of the preamble to the vehicle rule summarizes climate change science and impacts from the major scientific assessment reports (e.g., IPCC, USGCRP, NRC) on climate science. As indicated in Section III.F.2, sea level rise is one of the potential regional impacts to affect the Northeast. Sea level rise is expected to increase storm surge height and strength, flooding, erosion, and wetland loss along the coasts, particularly in the Northeast, Southeast, and islands. Further, Section III.F.2 notes that "Coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution. Sea level is rising along much of the U.S. coast, and the rate of change will very likely increase in the future, exacerbating the impacts of progressive inundation, storm-surge flooding, and shoreline erosion. Storm impacts are likely to be more severe, especially along the Gulf and Atlantic coasts." EPA notes however, that localized climate change impact assessments for the specific areas of New York and New Jersey are not estimated as part of this national vehicle rule.

Organization: State of New Jersey

Comment:

A commenter indicates the EPA relied on the MAGICC model to determine the overall impact of its rule on climate change. These modeling results showed small, but quantifiable, reductions in the global atmospheric CO_2 concentration, as well as a reduction in projected global mean surface temperature and sea level rise, from implementation of the proposal, across all climate sensitivities. The commenter agrees with the proposal's assessment of the emission reduction benefits of the proposal and its impacts on climate change and encourages the Agencies to move forward with the joint rule. [OAR-2009-0472-7109.1, p.10]

EPA Response:

Similar to the commenter's assertion, based on EPA's modeling approach, EPA notes the emission reductions resulting from this rule directionally represent a reduction in the adverse risks associated with climate change.. This modeling approach attempts to evaluate the impact of the rule's emissions reductions in the context of global GHG emissions. EPA's analysis estimates the benefits of this particular action in reducing GHG emissions and global warming impacts by quantifying these potential reductions using the best available science.

As mentioned previously, EPA's rule takes a wide variety of factors into consideration in determining that its GHG emissions standards are a reasonable exercise of authority under section 202(a).

Organization: Adcock, James

Comment:

The impact on climate change must be analyzed as part of an assumed national and international program to reduce GHG. To attempt to analyze CAFE in isolation is to assume the failure in human efforts to control global warming. When you assume a priori the failure in such efforts to control global warming, then the impacts of CAFE towards global warming can indeed be assumed trivial and be discounted away. Again, a priori, in methods of accounting and analysis, NHTSA is assuming the failure of world-wide efforts to control GHG. Such an assumption is inconsistent with the positions of the current President.

EPA Response:

We agree that addressing climate change will require global action, and will rely on both international and domestic programs. However, for the purpose of this rulemaking, it is necessary to quantify the impacts and understand the benefits of this particular action -- which is a part of the greater whole in responding to this challenge.

5.12. EPA Estimated Impact on Non-GHG Emissions and Their Associated Effect

Organization: Missouri Department of Natural Resources, Air Pollution Control Program

Comment:

The commenter [EPA-HQ-OAR-2009-0472-7480, p.1] is concerned that the vehicle standards in the proposed rule may lead to increases in criteria pollutant and air toxic emissions from mobile sources. In addition to providing comments on the proposed rule, the commenter also included a variety of comments that pertain to NHTSA's DEIS ("Criteria Pollutant Emissions" pp. 2-3, "Toxics Pollutant Emissions" pp. 3-4, "Localized Calculation of Emissions Reductions" pp. 4-5, and "Summary of Comments" p. 5). The commenter [OAR-2009-0472-7480, pp. 4-5] expresses concern that the results of NHTSA's DEIS project that some urban areas may have an increased level of criteria and toxic emissions resulting from the rebound effect. These results for nonattainment and maintenance areas are of particular concern because of the air quality status of the two largest urban areas in Missouri. St. Louis is currently designated as nonattainment for ozone and PM. Kansas City is designated as a maintenance area for ozone.

NHTSA and EPA only examined the emission reductions of benzene, 1,3-butadiene, formaldehyde, acetaldehyde, and acrolein, but should also have included other air toxics such as ethylbenzene, toluene, and the xylene isomers. It appears NHTSA and EPA's examination was incomplete, thus, raising questions on the results of the examination presented in this Federal Register notice. To address these concerns, the agencies should examine the emission reductions of all of the air toxics associated with the extraction, production, distribution, as well as the combustion, of fuel. In Table III.G-2 Annual Air Toxic Emission Impacts of Program (short-tons) on page 49593, NHTSA and EPA presented their estimation of the influence of the actions of their proposed National Program on the emissions of the aforementioned air toxics. According to the data in 2030 the proposed National Program would increase the emissions of 1,3-butadiene, acetaldehyde, and acrolein, and would decrease the emissions of benzene and

formaldehyde. The increased emissions equaled 100 short tons and the decreased emissions equaled 93 short tons for a net increase of 7 short tons of air toxic emissions. These increased emissions were due to downstream impacts reflecting the effects of the previously mentioned VMT rebound effect rather than upstream impacts reflecting the extraction, production, and distribution of motor gasoline. The data presented in Table III.G-2 therefore showed that the proposed actions of the National Program would increase the emissions of the aforementioned air toxics due to the increased total amount of gasoline undergoing combustion.

Yet the two agencies seemed to ignore the data presented in Table III.G-2. The agencies state on page 49709 that, 'For most of these pollutants, the reduction in upstream emissions resulting from lower fuel production and distribution will outweigh the increase in emissions from vehicle use, resulting in a net decline in their total emissions.' The data presented in Table III.G-2 contradicts this statement and neither agency presented data anywhere else in this notice that supported this statement. To correct this contradiction, NHTSA and EPA should present evidence that demonstrates the actions of the proposed National Program will not increase air toxics emissions from mobile sources. [OAR-2009-0472-7480, pp.2-3]

EPA Response:

EPA understands the commenter's concern that the GHG vehicle standards may lead to increased emissions of some pollutants from mobile sources. However, emissions changes alone are not a good indication of local or regional air quality impacts. The atmospheric chemistry related to ambient concentrations of PM2.5, ozone and air toxics is very complex, and making predictions based solely on emissions changes is extremely difficult. Full-scale photochemical modeling is necessary to provide the needed spatial and temporal detail to more completely and accurately estimate the changes in ambient levels of these pollutants. The length of time needed to prepare the necessary emissions inventories, in addition to the processing time associated with the modeling itself, precluded EPA from conducting a full-scale photochemical air quality modeling analysis in time for the NPRM. For the final rule, however, EPA performed a national-scale air quality modeling analysis to analyze the impacts of the standards on $PM_{2.5}$, ozone, and selected air toxics (i.e., benzene, formaldehyde, acetaldehyde, acrolein and 1,3-butadiene).

As discussed in Section 7.2 of the RIA, EPA's air quality modeling projects that final standards have relatively little impact on ambient concentrations of modeled $PM_{2.5}$, ozone, and air toxics. For annual and 24-hour $PM_{2.5}$, our air quality modeling projects design value changes of ±0.05 $\mu g/m^3$ for all Missouri counties, with the exception of one county near St. Louis which is projected to see decreases in annual and 24-hour $PM_{2.5}$ design values between -0.05 and -0.15 $\mu g/m^3$ (Section 7.2.2.1 of the RIA). Ozone design value changes as a result of the GHG standards finalized in this rule are ±0.1 ppb for all counties in Missouri. EPA notes that the commenter's concerns pertaining to NHTSA's DEIS are addressed in NHTSA's DEIS Comment Response document, available in NHTSA's docket for this rulemaking: NHTSA-2009-0059.

Although a large number of compounds which are considered air toxics could be impacted by the GHG vehicle standards, EPA focused on those which were identified as national and regional-scale cancer and noncancer risk drivers in past NATA assessments and were also likely to be

significantly impacted by the standards. These compounds include benzene, 1,3-butadiene, formaldehyde, acetaldehyde, and acrolein. In addition to developing emission inventories for these explicit model species in our photochemical model, EPA also developed inventories for a large number of precursor compounds, including aromatics such as ethylbenzene, toluene, and xylene isomers, through application of speciation profiles in SMOKE (see also Section 7.2.1.2 of the RIA). Thus, EPA does account for changes in the both upstream and downstream emissions of numerous air toxics beyond the five species for which we present air quality modeling results.

In addition, EPA is projecting overall decreases in most criteria and air toxic pollutant emissions due to the GHG standards (see Tables III.G-1 and III.G-2 in the preamble to the final rule). In most cases the net impacts are less than 1% of the projected 2030 inventory. As seen in the tables, EPA projects that the net impact of the program is a slight decrease in the majority of modeled emissions, and a slight increase in the remainder. The calculation of these impacts is documented in RIA Chapter 5 (substantially similar to the analysis presented in the record to the proposed rule). As discussed above, changes in emission inventories alone are not a good indication of local or regional air quality impacts. Overall, EPA's photochemical air quality modeling indicates that the final standards have relatively little impact on national average ambient concentrations of the modeled air toxics. Regional increases in formaldehyde, 1,3-butadiene, acrolein, and ethanol are not due to the standards finalized in this rule, but are related to our assumptions about the volume of ethanol that will be blended into gasoline. The ethanol volumes will be occurring as a result of the recent Renewable Fuel Standards (RFS2) rule and were accounted for by EPA in assessing the impacts of that rule.[49] For additional detail on air toxics results, please see Section 7.2.2.3 of the RIA.

Organization: Texas Commission on Environmental Quality

Comment:

The commenter [EPA-HQ-OAR-2009-0472-7180] argues that the rule proposal states that the new GHG emission standards will increase vehicle efficiency and, thereby, lower fuel consumption. However, the proposal acknowledges that the new GHG emission standards will also likely increase light-duty vehicle use as a result of the 'rebound effect' associated with higher fuel economy, resulting in increased criteria pollutant emissions. The 'rebound effect' is defined in the proposal as 'the tendency of drivers to drive their vehicles more as the cost of doing so goes down, as when fuel economy improves.' The proposal claims that the anticipated increase in criteria pollutants associated with the rebound effect would be offset by reduced emissions from reductions in domestic fuel refining and distribution brought about by lowering fuel consumption. [OAR-2009-0472-7180.1, p.2]

The commenter [EPA-HQ-OAR-2009-0472-7180, p. 2] is concerned that new GHG emissions standards for light-duty vehicles would result in increases in criteria pollutant emissions that are of critical importance for compliance with the NAAQS for ozone, primarily emissions of VOC and NOx. Specifically, the commenter is concerned that "in areas with little or no fuel refining

[49] EPA 2010, Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. February 2010. Docket EPA-HQ-OAR-2009-0472-11332

industry, such as the Dallas-Fort Worth ozone nonattainment area, the rebound effect would result in an increase in criteria pollutant emissions." The commenter is also expressed concern about the "anticipated increases in acetaldehyde and 1,3-butadiene."

The TCEQ has implemented a number of regulatory air quality control strategies in its ozone nonattainment areas to reduce VOC and NO_x emissions and is concerned that the adoption of the proposed rules for new GHG emissions standards for light-duty vehicles will have a negative impact on the efforts Texas has made to meet its current and future air quality goals, especially as EPA looks to tighten the ozone standard again. Additionally, the EPA is encouraged to align the mobile source control strategies with ozone reduction needs. Texas has made great strides in reducing ozone and ozone precursors from federally preempted mobile sources by incentivizing mobile fleet turnover through our Texas Emissions Reduction Plan and the Drive a Clean Machine program, and placing stringent controls on stationary sources. Because mobile source emissions now comprise the majority of NO_x emissions in Texas metropolitan areas, EPA should not let its GHG rulemaking initiatives interfere with the ability of states to attain and maintain increasingly stringent National Ambient Air Quality Standards. Unlike GHG emissions, increases in criteria pollutant emissions may have direct health impacts on the citizens of Texas. [OAR-2009-0472-7180.1, p.2]

EPA Response:

The non-GHG inventories and associated air quality modeling presented by EPA include the impacts of both the upstream and downstream emission consequences of the rule, including the impact of a rebound effect. This is described more fully in RIA Chapters 5 and 7.

EPA understands the commenter's concern about increases in criteria pollutant emissions that are important to attainment of the ozone NAAQS. EPA does not believe this rule will interfere with attainment of the ozone NAAQS. As discussed in Section 7.2 of the RIA, EPA's photochemical air quality modeling projects that the final standards have relatively little impact on ambient concentrations of ozone. Ozone design value changes as a result of the GHG standards finalized in this rule are ±0.1 ppb for all Texas counties, with the exception of four counties in the greater Houston area which see ozone design value decreases between -0.1 and -0.2 ppb due to projected upstream emissions decreases in NO_X and VOCs from reduced gasoline production. For annual and 24-hour $PM_{2.5}$, our air quality modeling projects design value changes of ±0.05 $\mu g/m^3$ for the majority of the counties in Texas. Some Houston-area counties are projected to see decreases in annual and 24-hour $PM_{2.5}$ design values between -0.05 and -0.25 $\mu g/m^3$ (Section 7.2.2.2 of the RIA).

Our modeling analysis of air toxics, described in Section 7.2.2.3 of the RIA, projects that ambient concentrations of acetaldehyde and 1,3-butadiene will decrease in Texas. EPA notes that we will be analyzing air quality impacts of increased renewable fuel use as required by the "anti-backsliding" provisions of Clean Air Act section 211(v), which also requires EPA to promulgate mitigation measures as appropriate, following that study.

Organization: South Coast Air Quality Management District

Comment:

The proposed emission standards and companion fuel economy standards will result in a significant reduction in greenhouse gas emissions as well as provide crucially important co-benefits in reducing criteria emissions in support of attainment of federal and state air quality standards for ozone and fine particulates. [Comments are from LA Testimony, OAR-2009-0472-7283, pp.59-67]

EPA Response:

As discussed in the RIA Chapter 7.2, EPA's air quality modeling projects relatively little impact on ambient concentrations of criteria pollutants and toxics, but there are net benefits associated with reductions in $PM_{2.5}$.

Organization: New York State Department of Environmental Conservation

Comment:

EPA's analysis projects criteria pollutant emission reductions as a result of implementation of these standards. In particular, emissions reductions are expected from fuel production and distribution industries. These reductions are background information, and provide some assurance that criteria pollutant emissions increases are unlikely. These reductions, and their geographic distribution, are not sufficiently certain to justify viewing them as offsets for emissions increases from other programs such as the Renewable Fuel Standard. [OAR-2009-0472-7454, p.5]

EPA Response:

EPA does not view any emissions reductions from this rule as "providing offsets" for emissions increases from other rules. EPA has an obligation under the "anti-backsliding" provisions of Clean Air Act section 211(v) to analyze the air quality impacts of increased renewable fuel use and promulgate mitigation measures as appropriate.

Organization: Yuli Chew, Private Citizen

Comment:

For the rebound effect, in the CARB's Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, Final Statements of Reasons, August 4, 2006, ARB staff estimates that the rebound and fleet turnover impacts are essentially offset by the benefits from reduced fuel cycle emissions. [OAR-2009-0472-7042.1, p.5]

I also believe that the rebound and fleet turnover impacts are essentially offset by the benefits from reduced fuel cycle emissions.[OAR-2009-0472-7042.1, p.6]

EPA Response:

The commenter states that the reduction in upstream emissions decreases is roughly equivalent to the rebound emissions, and references a California Air Resources Board report (http://www.arb.ca.gov/regact/grnhsgas/fsor.pdf). As shown in Preamble Section III.G, for volatile organic compounds (VOC), nitrogen oxides (NOx), and particulate matter ($PM_{2.5}$), upstream reductions are slightly larger than the emissions increases attributed to the rebound effect when a 10% rebound effect estimate is used. There are both upstream and downstream decreases of SOx emissions. EPA provides a full discussion of the impacts of rebound and upstream emissions in Section III.G of the preamble to the final rule and in Chapter 5 of the RIA.

5.12.1 Upstream Impacts of Program

Relevant comments have been included in Section 5.12.

5.12.2 Downstream Impacts of Program

Relevant comments have been included in Section 5.12.

5.12.3. Health Effects of Non-GHG Pollutants

Organization: American Lung Association of California
Physicians for Social Responsibility, Los Angeles
California State Senate
Environment New Jersey
South Coast Air Quality Management District

Comment:

American Lung Association of California

California's unique air quality problems demand the strongest possible action to fight global warming. Our state is home to some of the worst air quality in the nation, largely due to motor vehicles, and this air pollution crisis has created a public health crisis. The American Lung Association's 2009 national State of the Air report continued to demonstrate that California dominates the lists of worst polluted cities in the country. The report found that California has 6 out of the top 10 worst ozone polluted cities in the country and again listed the Los Angeles region as home to the worst ozone pollution in America.

Higher levels of death and illness from pollution exposures is experienced by vulnerable individuals, including those with asthma or other respiratory and cardiac illnesses, the elderly, infants, children, teenagers, low income communities, communities of color, and people living near pollution hot spots including heavily travelled roads. There are millions of individuals that are particularly vulnerable to pollution in our region.

Just as the transportation sector is the primary source of criteria pollution in California, it is also the primary source of greenhouse gases, and global warming is expected to worsen ozone pollution and its health effects. California and the rest of the country depend on this proposed

regulation as a key step to reduce this major source of global warming emissions. Without strong action, rising temperatures from global warming will likely lead to even more illness and suffering from increases in air pollution and pollen production, longer and more intense heat waves, and devastating wildfires and related smoke exposure. Recent research conducted by UC Berkeley estimates that the public health costs to California from global warming will add an additional cost of $3 billion to $24 billion annually depending on our success in reducing greenhouse gases. Scientists predict that here in Los Angeles, global warming will cause the number of heat wave days to rise dramatically, which could lead to a 75-85% increase in the number of days with unhealthy air quality.

[OAR-2009-0472-7216.1, Docket Number OAR-2009-0472-7216/7216.1 These comments are from testimony presented at the LA public hearing.]

Physicians for Social Responsibility, Los Angeles

Also when we focus on the health impacts of these tailpipe emissions and air pollution, for many years we have spoken, and rightly so, on the issues of asthma and respiratory disease. We must remember that air pollution poses a significant threat to the health of women who live in high-traffic areas.

Over the last decade, a large number of studies have investigated the possible adverse effects of ambient air pollution on birth outcomes. A number of key studies have been done in Los Angeles. The work of Dr. Beate Ritz, the doctor who worked with Dr. Tracy Woodruff, have shown that -- and both published in Environmental Health Perspectives -- have shown that there is a significant implication of air pollution in adverse birth outcomes, low birth weight, changes to the health of damaged heart valve development.

[These comments are from LA Testimony, OAR-2009-0472-7283, pages 79-85]

California State Senate

There is a compelling link between global warming and air pollution. Warmer temperatures increase our ozone and smog forming pollutants. We have alarming and growing respiratory illness, asthma and cancer rates occurring among our youth and the elderly. Several intense heat waves over weeks at a time have caused illness and deaths. Lower income neighborhoods that often lack air conditioning are particularly at risk during heat episodes. Agricultural losses, increases in vector borne diseases, and a dramatic increase in loss of property and air pollution from costly wildfires have become the new normal.

California is not the only state that is impacted by air pollution. From Denver, to Chicago, to Albuquerque New Mexico, air pollution is a serious health problem. Two years ago, I testified in Santa Fe, New Mexico as they were having a hearing on adopting California's Clean Car standards. Several doctors and pediatricians, on their own initiative, came to support the policy because of their concerns of their patients' health. For many, they said it was the first time they had ever testified at a government hearing.

[OAR-2009-0472-7275.1, also EPA-HQ-OAR-2009-0472-7283, pp. 13-20]

Environment New Jersey

Something that's clear to residents, especially from north Jersey, is the impacts of light-duty vehicles, cars and trucks, on our air pollution. In New Jersey, the majority of our counties still remain out of compliance with U.S. EPA health standards, to the extent that the asthma levels are certainly higher in New Jersey than other areas. They're especially high in urban areas that are closest to some of the largest highways in the state. These are again the externalities that were touched upon in the National Academy of Sciences report and these literally mean thousands of asthma attacks per year as well as increased levels of cancer and heart disease. [EPA-HQ-OAR-2009-0472-4621, pp. 77-78]

South Coast Air Quality Management District

[The following comments are from LA public hearing testimony OAR-2009-0472-7283, pp. 59-67.]

Over 25 percent of the nation's exposure to the eight-hour ozone standard occurs here in the South Coast Air Basin, while over 50 percent of the nation's 24-hour $PM_{2.5}$ standard exposure occurs here.

There are over ten million registered light-duty vehicles in the South Coast Air Basin. Reductions in fuel use associated with the standards proposed will therefore have a direct and tangible benefit in terms of public health and welfare in our region.

The Air Resources Board has shown its sensitivity in addressing this issue while carefully balancing social and industry needs to minimize cost and maximize consumer choice while maximizing overall benefits.

Central to this determination is the imperative to improve public health. We are especially pleased, therefore, that the ARB's program is fashioned around the value that there can be no tradeoff between greenhouse gas emissions and criteria emissions.

EPA Response:

EPA agrees that there is a link between climate change and air pollution. For instance, as summarized in the Technical Support Document of EPA's Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, according to the Intergovernmental Panel on Climate Change, climate change is expected to lead to increases in regional ozone pollution in the United States.[50,51]

[50] "Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" Docket: EPA-HQ-OAR-2009-0472-11292
[51] See 74 FR 66496 (Dec. 15, 2009)-8

In addition, emissions from light-duty vehicles contribute to ambient air pollution that poses significant health concerns. Section 7.1 of the RIA for this rule details the health effects associated with $PM_{2.5}$, ozone, CO, NOx, SOx and several air toxics. EPA agrees that air pollution in high-traffic areas is a significant issue; Section 7.1.1.6 of the RIA discusses exposure and health effects associated with traffic specifically. In addition, see Section III.G and III.H of the preamble to the final rule and Chapter 7 of the RIA for a discussion of the air quality and monetized health benefits of this rule.

5.12.4 Environmental Effects of Non-GHG Pollutants

No comments were received on the environmental effects of non-GHG pollutants. The Center for Biological Diversity's comments on the Endangered Species Act are addressed in Section 4.7 of this document.

5.12.5. Air Quality Impacts of Non-GHG Pollutants

Relevant comments have been included in Section 5.12.

5.13 EPA Estimated Cost, Economic, and Other Impacts

5.13.1 Conceptual Framework for Evaluating Consumer Impacts

"Energy Paradox"

Organization: American Council for an Energy Efficient Economy
Consumer Federation of America
International Council on Clean Transportation
University of Michigan Transportation Research Institute (UMTRI)
Consumer Federation of America
Union of Concerned Scientists
James Adcock
New York University School of Law, Institute for Policy Integrity (IPI)

Comment:

American Council for an Energy Efficient Economy

In terms of consumer welfare, from this perspective, the discussion of consumer welfare impacts of the proposed rule is troubling. The agencies' finding that raising fuel economy will increase consumer welfare despite the modest share of vehicles purchased today that are highly efficient is not a conundrum, but rather a manifestation of extensively studied failures in the market for energy for energy efficiency. The vehicles that will enable manufacturers to meet the new standards by and large are not available today. The standards have been designed to allow vehicles in each market segment to attain the required fuel economy and emissions levels

without changes to other vehicle properties. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 146-147.]

Consumer Federation of America

The very large potential efficiency gains estimated by the engineering/economic analysis conducted by NHTSA/EPA, which can be most easily summarized by nothing that, even at the highest and most expensive level, the cost of saved energy is about one-third of the price to consume energy, are at the core of a decades long debate over fuel economy standards. In a capitalist economy, when problems are serious, like rising energy prices and imports, and a solution is inexpensive and potentially widely available, one would expect people to seize it. The existence of the "efficiency gap" immediately raises the question: "Why don't people buy more of it?'

The efficiency gap is not new, nor is it confined to the transportation sector. A similar efficiency gap is found in building sector energy consumption. As Exhibit I-1 shows, the magnitude of the problem is similar across sectors. In the past few months, four major national research institutions have released reports that document the huge potential for investments in energy efficiency to lower consumers' bills and greenhouse gas emissions, creating a win-win for consumers and the environment. The National Research Council of the National Academy of Sciences has estimated the potential reduction in electricity, natural gas and gasoline at approximately 30 percent, similar to the estimates of NHTSA/EPA. McKinsey and Company and the American Council for Energy Efficient Economy have reached a similar conclusion on electricity and natural gas. Across these three sectors, saving energy costs about one third of the price of consuming it. See [OAR-2009-0472-7272.1, pp.15-22] for extensive analysis

[The following comments were submitted as testimony at the Detroit public hearing. See docket number EPA-HQ-OAR-2009-0472-6185, pp. 108-111]

Our research shows that the market failure is on the supply side as well as the demand side. Survey research shows there is a huge mismatch between consumer demand and the vehicles offered in the marketplace for efficiency. Analysis shows that consumers began shifting their consumption patterns five years ago, but the automakers were unwilling or unable to respond, and they were left with a growing number of vehicles that they could not sell.

But the most ironic fact is the following: The behavioral economics literature that the agencies cited in their notice conclude that consumers are deficient in motivation, perception, and calculation, and that that is a basis on which to conclude there is a market failure. But at the same time those models incorrectly assume that producers are perfect, have perfect information, perfect foresight, and perfect analytic capability.

It turns out, as the headline of the Detroit Free Press says today, 'Producers are people, too.' They suffer the same deficiencies of motivation, perception, and calculation, and it turns out they also have perverse incentives to exploit information asymmetries and abuse market power to increase profit.

So these two sets of far-from-perfect actors come together in a set of market institutions that compound and magnify their deficiencies. The result is a 30-percent market failure, one of the grossest inefficiencies in our whole economy. We consume 30 percent more energy than we should if we're behaving efficiently. That shortfall costs consumers, reduces consumer welfare, and fuel economy standards are the way to address it.

So EPA and NHTSA have an opportunity in the current rulemaking to establish a platform on which a dynamic, innovative automobile sector can be built in America, one which meets the needs for transportation in our continental economy in a manner that saves consumers money, enhances national security through reduced oil imports, and ensures the transportation sector makes its fair contribution to meeting the challenge of global warming.

To build that platform it is critically important to recognize the vital role that fuel economy standards play in correcting market failures and set standards at a level that captures the full measure of the value of the increased efficiency. In so doing, they will create an environment in which a new automobile industry can thrive. We look forward to working with the agency to build that platform.

International Council on Clean Transportation

The impact of the proposed standards on consumer welfare is the subject of much debate in the proposal, reflecting the lack of clarity and understanding of this issue in general. The debate revolves around the so-called Energy Paradox. Assuming full information and perfect foresight, standard economic theory says that consumers will make optimal tradeoffs between the purchase price and subsequent operating costs. In short, the problem is that consumers appear not to purchase products that are in their economic self-interest.

Both agencies chose to exclude estimates of consumer welfare loss due to changes in vehicle choice. Although this was done primarily because of methodological concerns, ICCT supports this decision and does not believe there is significant consumer welfare loss in this case. Consumers do undervalue fuel savings because of uncertainty and loss-aversion and generally understand that standards do not reduce their welfare, as explained below.

There is substantial circumstantial evidence that most consumers in the U.S. place a low value on fuel economy. For example, Turrentine and Kurani, 1 conducted an in depth survey of the car-buying histories of 57 California households. None of these 57 households made any kind of quantitative assessment of the value of fuel savings and only 9 stated they compared the fuel economy of vehicles in making their choice. The selected consumers were largely unaware of their annual fuel cost, in contrast to general knowledge of the daily price fluctuations of a gallon of gasoline. Turrentine and Kurani concluded that: "When consumers buy a vehicle, they have neither the tools nor the motivation nor the basic building blocks of knowledge to make a calculated decision about fuel costs."

Turrentine and Kurani's findings were not based upon a representative sample, but they are generally supported by the results of a 2007 national random survey of 1,030 households (Opinion Research, 2007). When asked about their last vehicle purchase, 39 percent of

respondents indicated they did not consider fuel economy at all and, of those who did, only 14 percent mentioned taking fuel costs or gasoline prices into consideration.

The question that has been debated for decades is simply – why? This is an extremely important question, as most of the calculation of consumer welfare is based on the answer. If consumers are already receiving their optimum level of fuel economy, then efficiency standards will decrease their welfare. However, if there are valid reasons why consumers are not making optimal tradeoffs at the time of vehicle purchase, or if the entire question is not being framed properly, then efficiency standards could increase consumer welfare.

NHTSA, EPA, and the U.S. Office of Management and Budget (OMB) all recognize the importance of the Energy Paradox, but state that it is not currently possible to fully account for all effects on consumer welfare. While they all estimate the benefits of the GHG rule would outweigh eventual losses of associated private welfare, they suggest further analyzing the subject of consumer welfare for future rule making:

EPA said they are not able to estimate the consumer welfare loss that may accompany the actual fuel savings from the proposal and asked for comments "on how to assess these difficult questions in the future". NHTSA invites comments "on the state of the art of consumer vehicle choice modeling, as well as on the prospects for these models to yield reliable estimates of changes in consumer welfare from requiring higher fuel economy." OMB provided a 17 page document containing suggested revisions for sections III.H and IV.G of the preamble. While their suggestions were not incorporated into the text in the proposed rule, their document indicates OMB's concern about consumer welfare and their desire to settle the long-standing issues. Compared to the language in the preamble, the OMB language is more precise and clear and the text is more structured. For example, they would have rewritten EPA's request for comments to say, "EPA is not in a position to produce empirical estimates of the magnitude of these losses. We lay out a framework for how EPA will make progress on this issue for future rulemakings."

NHTSA and EPA accurately discussed the uncertainty-loss aversion theory in the proposal. However, it was presented as one of an array of possible explanations. Not only is uncertainty-loss aversion sufficient to explain consumer behavior by itself, but the other forms of market failure can also be viewed simply as factors increasing the uncertainty of the future fuel cost savings.

Does this mean that customers only value 3 years of fuel savings and that their consumer welfare will decrease if standards force them to save money on fuel from technologies that achieve a fuel-savings based payback in more than 3 years? Not necessarily. There are two important issues that affect the conclusion: (1) Standards change the status quo by removing the option to buy a vehicle without the additional efficiency technology – it is not presented to the customer at all. (2) Standards require everyone to purchase higher levels of efficiency technology, not just individual customers, leading to indirect consumer welfare benefits.

The concept of consumer welfare under standard economic theory is based upon individual choices. However, efficiency standards affect everyone, not just individual customers. This

changes the calculation of consumer welfare. The individual's welfare is now the sum of the direct impact on the individual and the indirect benefit to the individual of forcing other customers to buy more efficient vehicles.

There is also a potential issue with the consumer welfare of second and subsequent owners. In reality, the original purchaser likely does not assess the full useful life fuel savings, including uncertainty, when making purchase decisions. Rather, the original purchaser likely assesses the fuel savings for his/her ownership period plus the additional amount the second owner will pay for the higher fuel economy, both including uncertainty. Because of uncertainty, the original owner severely discounts what the second owner would be willing to pay for the higher fuel economy. If this discounted value is smaller than the value the subsequent owner would place on the fuel savings, including uncertainty, this creates a loss of welfare for the second owner.

University of Michigan Transportation Research Institute (UMTRI)

This section responds to interagency comments received prior to the publishing of the NPRM in the Federal Register. These interagency comments are contained in Document ID: EPA-HQ-OAR-2009-0472-0317.2: "Corporate Average Fuel Economy/Green House Gas (CAFE/GHG) Notice of Proposed Rule Making (NPRM) Summary of Interagency Comments under E. 0. (Executive Order) 12866". The interagency comments are in the form of a suggested rewrite of Section III.H of the "Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards". [OAR-2009-0472-3651.1, p.5]

The key paragraph contains the conceptual rationale for the suggested approach.

"The changes in welfare, holding constant vehicle purchases, turn on assumptions about consumers' private discount rate. Assuming perfectly competitive markets and perfect consumer foresight, standard economic theory suggests that in the absence of regulation, consumers currently make optimal trade-offs between the cost of purchasing a new vehicle and its subsequent operating costs (i.e., fuel expenditures, time spent refueling, and the benefits of additional driving). The assumption of perfect consumer foresight has of course run into serious theoretical and empirical objections in recent years, especially from behavioral economics. But it is important to see that on the stated assumption, no net private benefits accrue from the rule, since the regulation will change the purchase price of new cars and the stream of operating costs. The essence of this view is that in the absence of the regulation, consumers fully understand their current and future financial positions and optimally balance the trade-off between upfront costs and future operating costs. For this reason, CAFE or any other regulation that alters this trade-off must harm their private well being. This intuition behind this conclusion is best captured by the recognition that automobile companies currently sell vehicles that already comply with the standards set forth in this rule -- yet many consumers choose not to purchase these vehicles." [OAR-2009-0472-3651.1, p.6]

In evaluating proposed regulations, the benefits and costs of the regulation must be measured against a baseline. The above paragraph suggests that the baseline should be "perfectly competitive markets and perfect consumer foresight". However, according to the OMB's

guidelines for economic analysis of regulations, the baseline should be the "best assessment of the way the world would look absent the proposed regulation". Perfectly competitive markets and perfect consumer foresight do not describe the way the world looks today and are highly unlikely to describe the way the world would look in the future—with or without the proposed GHG emission standards. [OAR-2009-0472-3651.1, p.6]

Market failure can arise from externalities, market power, and inadequate or asymmetric information. The "market" for clean, fuel-efficient motor vehicles has all the necessary conditions for market failure. The most significant are inadequate information about the future and limitations in human rationality. Neither consumers nor automakers possess perfect foresight and rationality in making decisions. Calculations of welfare loss based on subjective consumer valuation are always problematic—they are difficult to estimate and difficult to justify. Using the perfect market populated by perfect producers and perfect consumers as the baseline against which gains and losses are assessed assumes that the status quo is the perfect market. [OAR-2009-0472-3651.1, p.6]

The OMB guidelines have it right—the baseline should be the way the real world would look absent the regulation. Adopting the approach in the suggested rewrite of section III.H would get it wrong. [OAR-2009-0472-3651.1, p.6]

In standard economic theory, a perfectly competitive market populated by consumers and firms with perfect foresight is, by definition, a world in which private welfare is maximized. Thus, any regulated change of product attributes or mix of products reduces private welfare. Setting the baseline as the perfectly competitive market populated by consumers and firms with perfect foresight, and then "concluding" that GHG emission regulations result in private welfare loss is an example of a rhetorical tautology. The conclusion is already present in the assumption. [OAR-2009-0472-3651.1, p.7]

The last sentence in the quoted paragraph reads, "This intuition behind this conclusion is best captured by the recognition that automobile companies currently sell vehicles that already comply with the standards set forth in this rule -- yet many consumers choose not to purchase these vehicles." The statement is misleading. Targets are set vehicle-by-vehicle based on footprint, however the standard must be met by each company. Thus, it is wrong to say that some vehicles already comply with the standards. [OAR-2009-0472-3651.1, p.7]

Let's assume that what was meant by the statement is that automobile companies currently sell some vehicles that are very fuel-efficient and clean, and that some consumers choose not to purchase these clean fuel-efficient vehicles. This is a true statement. However, the observed diversity in consumer purchases does not imply that CAFE necessarily harms private well-being. Since that conclusion is tautologically true if one assumes a perfectly competitive market with consumers and producers with perfect foresight, the observed diversity in consumer purchases is irrelevant. [OAR-2009-0472-3651.1, p.7]

[UMTRI also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 40-42.]

Consumer Federation of America

[Following is from [OAR-2009-0472-7272.1, p.42]

As discussed in Section II, the Notice barely scratches the surface of the debate over the "efficiency gap" and the policies to deal with it. The terminology applied to describe the failure of energy markets to achieve the level of energy efficiency one would expect from a theoretically efficient market has proliferated as concern over this problem has grown. The existence of this "efficiency gap" is explained with terms like barriers, obstacles, challenges, imperfections, and failures. These terms are often applied differently by different authors. When all is said and done, however, there is substantial consensus on the challenges energy efficiency faces.

To establish a framework for explaining the existence and magnitude of the market failure, as well as why fuel economy standards are an effective solution to the problem, this section reviews several literatures.

First, we review the discussion of the issue in the Notice of Proposed Rulemaking and its supporting documents. The agencies have invited comment on this issue.

Second, we briefly establish the basis for market failure analysis in the general economic literature. We start from traditional economic discussions and then move to more recent challenges to the traditional model in transaction cost and behavioral economics.

Third, we review the general "efficiency gap" literature. This literature was cited in the Notice and supporting documents.

Fourth, we review the "efficiency gap" literature as it relates directly to fuel economy and the importance of supply-side causes of market failure. This literature was also cited in the Notice and supporting documents.

Union of Concerned Scientists

Consumers also have not had perfect substitutes available in the market. The assertion that "fuel efficient cars are currently offered for sale, and consumers' purchasing decisions may suggest a preference for lower fuel economy than the proposed rule mandates" indicates a lack of knowledge about the actual vehicle offerings. For example, in minivans available for Model Year 2010, consumer fuel economy choices range from 18-20 mpg. To achieve higher fuel economy a consumer has one choice, a 23 mpg model that is smaller and less powerful than the others on the market. While a consumer choosing the 20 mpg model instead of the 23 mpg model does indicate that they place more value on the available size and performance than on the benefit of a 3 mpg increase, it does not imply that they would experience a welfare loss if they were given a 23 mpg vehicle with the same size and performance as the 20 mpg model. With the technology available to automakers, consumers will be able to purchase 2016 models with the same size and performance, and likely even better safety, than they have today while also saving money on fuel. [OAR-2009-0472-7181.1, pp.15-16]

Finally, the argument that consumers have an intuition that allows them to act as if they were operating in a perfect market is belied by the shifts in sales away from large SUVs that occurred as gas prices shot up in 2007 and 2008. Consumers, and manufacturers, were clearly unprepared for these changes and lacked the foresight and substitutes to maintain their welfare. If this intuition exists, it must be based on some unknown ability, as recent work by Kurani and Turentine indicates that consumers "do not have the basic building blocks of knowledge to make an economically rational decision." [OAR-2009-0472-7181.1, p.16]

James Adcock

The "Energy Paradox" Explained: Traditionally more expensive vehicles consume more fuel which corresponds to a generally marketing pattern of "conspicuous consumption" by more wealthy consumers - where consumers display their personal wealth and power through their display of overall consumption. High MPG vehicles such as a Prius turn this standard marketing paradigm on its head: now the wealthier consumer is paying to display their NON-consumption. Hollywood for example "Living with Ed" has been trying to sell the "less is cool" message for many years now. But then small high-MPG vehicles like the Prius conflict with the general marketing message of a Mfg which is "More is Better." This problem with mixed marketing messages coming from a Mfg was best represented by GMC having to decide whether to produce the EV 1 or the Hummer - GMC couldn't do both because of the oxymoron corporate marketing message involved. Likewise Toyota today falls under consumer pressure to stop manufacturing large trucks and become a "Purely Green" company.

We believe NHTSA continues to misunderstand the oil shock 1973 : It was high gas prices, NOT CAFE which lead consumers to downsize their choice of vehicles . Higher CAFE standards allow the consumer to be able to afford to buy a larger more safe vehicle than in the absence of CAFE. Consumer preference in vehicles HAS changed as indicated by Mfgs advertising MPG NOT HP in their TV ads . That offered MPG is not what consumers desire can be implied by the universal Mfg practice of touting HWY MPG NOT "Combined" MPG in their TV ads. The NHTSA discussion of consumer implied discounting rates cannot explain the success of the Prius . NHTSA needs to be able to explain this "anomaly" and also be able to explain the extremely high consumer satisfaction indices associated with Prius purchases. Recent refusals of consumers to buy large low MPG trucks would imply that it is NHTSA and the Mfgs who are not valuing MPG correctly - not consumers! NHTSA complains that consumers do not correctly value gas savings while allowing Mfgs to widely misrepresent the fuel efficiency of their vehicles, for example by broadcasting televisions ads which display HWY MPG as-if it were Combined MPG. The fact that Mfgs feel the need to misrepresent the MPG they are achieving demonstrates that consumers want higher fuel economy than Mfgs are providing. In the face of this CAFE can be seen as fulfilling an important consumer protection role against the misleading Mfgs Advertising.

"If . . . consumers have reliable information to estimate . . . future fuel savings." But consumers DO NOT have such "reliable information!" What consumers get is Mfg unreliable information in the way of TV ads that tout unrealistically high MPG while the unreadable fine print on the bottom of the screen says we are quoting HWY MPG not the more realistic COMBINED MPG."

So consumers believe they are buying higher MPG than they are actually getting because Mfgs are misrepresenting MPG in TV ads.

"Compromising Performance" is only a compromise to the extent that consumers WANT their "performance" measured on a "0 to 60" basis. To the extent consumers want their "performance" measured on an "MPG" basis then downsizing engines cost the Mfgs "Less than Nothing" - thus NHTSA standards based on an assumed "no change in performance" [meaning no change in "0 to 60"] are in fact being set too low - because at least some consumers measure "performance" on an MPG basis, not on a "0 to 60" basis.

New York University School of Law, Institute for Policy Integrity (IPI)
All other things equal, fully informed and perfectly rational consumers should be indifferent between a $1 increase in vehicle purchase price and a $1 savings in net present value of fuel costs. Yet a growing body of evidence suggests that consumers under-weigh costs that are less salient or accrue in the future, such as shipping and handles charges, management fees, sales tax, electricity, and fuel. One very recent study using a novel design and conservative assumptions found a significant average undervaluation of vehicle operating costs: consumers were willing to pay only 25 cents extra to reduce the net present value of expected gas costs by $1. [OAR-2009-0472-7232.3, p. 5]

This discrepancy—called the Energy Efficiency Paradox—can be depicted graphically [See OAR-2009-0472-7232.3, p. 5 for the graph.]. At a car's market price, some consumers will not buy, and others would actually be willing to pay more. [OAR-2009-0472-7232.3, p. 5]

The area between the demand curve and the market price—the "consumer surplus"—defines the value consumers attach to a good above its market price. Consumers will buy a car up the point where the purchase price plus the perceived operating costs equals their willingness to pay. However, if actual operating costs are much higher than perceived operating costs, consumers will buy more of this particular car model than they rationally should. Moreover, economic studies that look only at consumers' choices would overestimate consumer surplus and would therefore overestimate the lost consumer welfare from restricting the consumers' ability to select that particular model. [OAR-2009-0472-7232.3, p. 6]

Explanations for the Energy Efficiency Paradox will inform the appropriate regulatory response. NHTSA raises the possibility that no paradox exists: rather, consumers might be making a rational choice given uncertainty about future fuel prices and their vehicle's expected lifetime and usage. Consumers might compare the known, irreversible, upfront purchase price against an unknowable future stream of fuel savings, and choose to minimize the former. Regulations restricting such a choice would reduce consumer welfare. The current empirical evidence for such an explanation seems mixed at best: NHTSA should consider whether the evidence is sufficient to warrant adjusting its estimate of the Energy Efficiency Paradox, but overall support does not seem to justify a conclusion that no paradox exists. [OAR-2009-0472-7232.3, p. 6]

Another possible explanation is that consumers lack the necessary information to make a rational choice, do not fully appreciate the information presented, or are unable to translate information on fuel efficiency into expected fuel savings. This almost certainly is part of the problem, and the

agencies should continue efforts in the proposed rulemaking to improve the labeling and information available to consumers, especially in light of recent research demonstrating how mere differences in the presentation of numbers can alter consumer valuations. [OAR-2009-0472-7232.3, p. 6]

But even if consumers had full information, the Energy Efficiency Paradox might persist if consumers apply a high discount rate to operating costs or are especially averse to short□term loss. In such a case, there is a legitimate role for government regulation to encourage consumers to consider the long-term costs of car ownership. And, as explored more fully in the next section, government regulation may be necessary to correct market failures that lead consumers to make sub-optimal choices about fuel efficiency. [OAR-2009-0472-7232.3, p. 6]

EPA Response:

For this rule, EPA projects significant private gains to consumers in three major areas: (1) reductions in spending on fuel, (2) time saved due to less refueling, and (3) welfare gains from additional driving that results from the rebound effect. In combination, these private savings, mostly from fuel savings, appear to outweigh by a large margin the costs of the program, even without accounting for externalities.

Admittedly, these findings pose an economic conundrum. On the one hand, consumers are expected to gain significantly from the rules, as the increased cost of fuel efficient cars appears to be far smaller than the fuel savings. Yet these technologies are readily available; financially savvy consumers could have sought vehicles with improved fuel efficiency, and auto makers seeking those customers could have offered them. Assuming full information, perfect foresight, perfect competition, and financially rational consumers and producers, standard economic theory suggests that normal market operations would have provided the private net gains to consumers, and the only benefits of the rule would be due to external benefits. Assuming those conditions, if our analysis projects that there are net private benefits that consumers have not realized in this perfectly functioning market, then increased fuel economy should be accompanied by a corresponding loss in consumer welfare. This calculation assumes that consumers accurately predict and act on all the benefits they will get from a new vehicle, and that producers market products providing those benefits. The existence of large private net benefits from this rule, then, suggests either that the assumptions noted above do not hold, or that EPA's analysis has missed some factor(s) tied to improved fuel economy that reduce(s) consumer welfare. With respect to the latter, EPA believes the costs of the technologies developed for this rule take into account the cost needed to ensure that all vehicle qualities (including performance, reliability, and size) stay constant, except for fuel economy and vehicle price. As a result, there would need to be some other changed qualities that would reduce the benefits consumers receive from their vehicles. Changing circumstances (e.g., increased demand for horsepower in response to a drop in fuel prices), and any changes in vehicle attributes that manufacturers elect to make may result in additional private impacts to vehicle buyers from requiring increased fuel economy.

The central conundrum has been referred to as the Energy Paradox in this setting (and in several others).[52] In short, the problem is that consumers appear not to purchase products that are in their economic self-interest. There are strong theoretical reasons why this might be so.[53] Consumers might be myopic and hence undervalue the long-term; they might lack information or a full appreciation of information even when it is presented; they might be especially averse to the short-term losses associated with the higher prices of energy efficient products (the behavioral phenomenon of "loss aversion"); even if consumers have relevant knowledge, the benefits of energy efficient vehicles might not be sufficiently salient to them at the time of purchase; or, in the case of vehicle fuel efficiency, consumers may have relatively few choices to purchase vehicles with greater fuel economy once other characteristics, such as vehicle class, are chosen. A great deal of work in behavioral economics identifies factors of this sort, which help account for the Energy Paradox.[54] This point holds in the context of fuel savings (the main focus here), but it applies equally to the other private benefits, including reductions in refueling time and additional driving.[55]

Considerable research suggests that the Energy Paradox is real and significant due in part to consumers' inability to value future fuel savings appropriately. For example, Sanstad and Howarth (1994) argue that consumers optimize behavior without full information by resorting to imprecise but convenient rules of thumb. Consumers face difficulty in predicting the fuel savings that they are likely to get from a vehicle, for a number of reasons. For instance, the calculation of fuel savings is complex, and consumers may not make it correctly.[56] Larrick and Soll (2008) find evidence that consumers do not understand how to translate changes in miles-per-gallon into fuel savings (a concern that EPA is continuing to attempt to address).[57] In addition, future fuel price (a major component of fuel savings) is highly uncertain. Consumer fuel savings also vary across individuals, who travel different amounts and have different driving styles. Studies regularly show that fuel economy plays a role in consumers' vehicle purchases, but modeling that role may still be in development.[58]

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[52] Jaffe, A. B., and Stavins, R. N. (1994). The Energy Paradox and the Diffusion of Conservation Technology. Resource and Energy Economics, 16(2), 91-122. Docket EPA-HQ-OAR-2009-0472-11415.

[53] For an overview, see id.

[54] Jaffe, A. B., and Stavins, R. N. (1994). The Energy Paradox and the Diffusion of Conservation Technology. Resource and Energy Economics, 16(2), 91-122. Docket EPA-HQ-OAR-2009-0472-11415.

[55] For example, it might be maintained that, at the time of purchase, consumers take full account of the time spent refueling potentially saved by fuel-efficient cars, but it might also be questioned whether they have adequate information to do so, or whether that factor is sufficiently salient to play the proper role in purchasing decisions.

[56] Turrentine, T. and K. Kurani (2007). "Car Buyers and Fuel Economy?" Energy Policy 35: 1213-1223 (Docket EPA-HQ-OAR-2009-0472); Larrick, R. P., and J.B. Soll (2008). "The MPG illusion." *Science* 320: 1593-1594 (Docket EPA-HQ-OAR-2009-0472-0041).

[57] Sanstad, A., and R. Howarth (1994). "'Normal' Markets, Market Imperfections, and Energy Efficiency." Energy Policy 22(10): 811-818 (Docket EPA-HQ-OAR-2009-0472-11415); Larrick, R. P., and J.B. Soll (2008). "The MPG illusion." *Science* 320: 1593-1594 (Docket EPA-HQ-OAR-2009-0472-0043).

[58] Busse, Meghan R., Christopher R. Knittel, and Florian Zettelmeyer (2009). "Pain at the Pump: How Gasoline Prices Affect Automobile Purchasing in New and Used Markets," Working paper (accessed 6/30/09), available at http://www.econ.ucdavis.edu/faculty/knittel/papers/gaspaper_latest.pdf (Docket EPA-HQ-OAR-2009-0472-0044).

If there is a difference between fuel savings and consumers' willingness to pay for fuel savings, the next question is, which is the appropriate measure of consumer benefit? Fuel savings measure the actual monetary value that consumers will receive after purchasing a vehicle; the willingness to pay for fuel economy measures the value that, before a purchase, consumers place on additional fuel economy. As noted, there are a number of reasons that consumers may incorrectly estimate the benefits that they get from improved fuel economy, including risk or loss aversion, and poor ability to estimate savings. In addition, fuel economy may not be as salient as other vehicle characteristics when a consumer is considering vehicles. If these arguments are valid, then there will be significant gains to consumers of the government mandating additional fuel economy. The RIA, Chapter 8.1.2, includes further discussion of these phenomena.

EPA disagrees with the IPI's characterization of the Energy Efficiency Paradox. In the paradox, as discussed in EPA Preamble III.H.1 and RIA 8.1.2, consumers buy less fuel economy than the cost-effective level. As a result, there are consumer benefits that are left unrealized. Some economic models of the fuel economy market assume away the paradox, by adjusting the models to incorporate additional, undefined costs that lead to marginal benefits equaling marginal costs. In those models, any required increase in fuel economy must make consumers worse off, because they are already buying the cost-effective amount. If, however, the savings from improved fuel economy exceed the costs of the technology to provide it, then consumers can gain from fuel economy standards.

That said, EPA agrees that consumers may not make fuel economy decisions in ways that minimize their costs, and that "there is a legitimate role for government regulation" in this context.

Discount Rate for Fuel Savings

Organization: Natural Resources Defense Council

Comment:

Fuel Savings Should Be Valued Using a 3 Percent Discount Rate
When evaluating the private benefits of fuel savings to consumers, we support the EPA and NHTSA use of a 3 percent discount rate as a reasonable approach since it is consistent with OMB guidance and current DOE practice when evaluating benefits of energy savings from residential appliance standards. While we appreciate the richness of the agencies' discussions regarding the "energy paradox", the existence of high implicit or revealed consumer discount rates simply points to the need for strong standards to ensure consumers have access to investments in highly cost-effective fuel savings technologies. The appropriateness of government standards to help overcome market barriers to energy efficiency investments and necessary to meet national energy savings and environmental goals has been well established with decades of state and federal efficiency standards for appliances, buildings and vehicles. [OAR-2009-0472-7141.1, p. 23]

The use of a 3 percent to evaluate the consumer welfare benefits of fuel savings is fully consistent with guidance from OMB (Circular A-4) for evaluating net benefits in a regulatory analysis. The 3-percent rate is the average real rate of return on long-term government debt over the last 30 years. OMB Circular A-4 also permits the use of a 7 percent discount rate which is an estimate of the average before-tax rate of return to private capital in the U.S. economy. NRDC believes the lower end of the range is the most appropriate to use and has consistently argued for a discount rate of 3 percent or even lower when valuing the benefits of fuel savings. [OAR-2009-0472-7141.1, p. 24]

The use of the 3 and 7 percent discount rates is also the standard DOE practice for evaluating the electricity cost savings for residential appliances. The most recent example is the final rule adopted April 8, 2009 for dishwashers, dehumidifiers, microwave ovens, electric and gas kitchen ranges and ovens. In this final rule, DOE estimated the benefits and costs of the standards in the following manner:

The benefits and costs of today's final rule to the Nation can also be expressed in terms of annualized [2006$] values over the forecast period (2012 through 2042). Using a 7-percent discount rate for the annualized cost analysis, the cost of the standards established in today's final rule is $17 million per year in increased product and installation costs, while the annualized benefits are $37 million per year in reduced product operating costs. Using a 3-percent discount rate, the cost of the standards established in today's final rule is $28 million per year and the benefits are $85 million per year. [OAR-2009-0472-7141.1, p. 24]

The use of an "implicit" or "revealed" consumer discount rate is entirely inappropriate when evaluating policies that specifically address the very market barriers that create the high implicit discount rates. NRDC strongly disagrees with interagency comment number 34 that recommends evaluating consumer discount rates of 20 percent, 35 percent, and 50 percent. Such discount rates are inappropriate and inconsistent with previous rulemakings on consumer energy efficiency appliance standards by DOE and fuel economy standards by NHTSA. The 20 percent and higher discount rates represent an 'implicit' consumer discount rate that is a result of a number of market barriers to fuel efficiency, exactly which the proposed GHG and CAFE standards are well suited to overcoming. [OAR-2009-0472-7141.1, p. 24]

EPA Response:

EPA has used the standard 3% and 7% discount rates for its calculation of the benefits from fuel savings in Preamble Section III.H.4. EPA believes that whether consumers use high discount rates when they are buying a vehicle is a separate issue from the fuel savings that they will receive, and the discount rates associated with the money from the fuel savings.

Discount Rate Applied to Future Benefits

Organization: New York State Department of Transportation (NYSDOT)

Comment:

It is not clear if the same discount rate that is applied to future benefits is applied to future costs in the proposal. For example, several tables (e.g. Tables IV.G.4-10 through IV.G.4-14) present various cost and benefit values. The titles of these tables imply that a discount rate is applied equally to costs and benefits. However, the NPRM defines the discount rate as follows:

'The Reference Case uses a discount rate of 3 percent to discount future benefits.' Although the sensitivity analyses in the DEIS and NPRM indicate that the only economic factors of importance are industry compliance costs, the cost of fuel, and the magnitude of the rebound effect, the DEIS and NPRM should more clearly define how discount rates are applied to both costs and benefits. As noted in our comments to NHTSA dated September 8, 2008, discount rates should be applied to both benefits and costs. [OAR-2009-0472-7531.1, pp.2-3]

EPA Response:

For the final rule, EPA and NHTSA have used both a 3 percent and 7 percent discount rate to estimate the present value of costs, benefits and net benefits associated with the final rule. We have made it clear, both in the text and in the tables, which results are associated with a 3 percent discount rate and which are associated with a 7 percent discount rate.

Role of Benefit-Cost Analysis

Organization: University of Michigan Transportation Research Institute (UMTRI)
New York State Department of Transportation (NYSDOT)

Comment:

University of Michigan Transportation Research Institute (UMTRI)

Assuming perfectly competitive markets populated by consumers and producers with perfect foresight does allow economists to produce estimates of intangible, subjective costs and benefits that appear to be precise. Given the unrealistic assumptions required, the estimates are questionable. EPA should avoid treating estimates of intangible, subjective gains and losses as if they were tangible and objective. [OAR-2009-0472-3651.1, p.7]

Neoclassical welfare economic analysis is what is recommended in EPA-HQ-OAR-2009- 0472-0317.2: "Corporate Average Fuel Economy/Green House Gas (CAFE/GHG) Notice of Proposed Rule Making (NPRM) Summary of Interagency Comments under E. 0. (Executive Order) 12866". The foundations of neoclassical welfare economics consist of (1) the theory of the consumer as a rational utility maximizing agent, (2) the theory of the firm as a profit maximizing agent, (3) perfect foresight by both sets of agents, and (4) a perfectly competitive market. In recent years, empirical and conceptual contributions in consumer behavior and the theory of the firm have undermined these foundations. If the foundations give way, then the apparatus of neoclassical welfare economic analysis collapses. Benefit cost analysis (BCA) is then a dubious tool for policy judgments. [OAR-2009-0472-3651.1, p.7]

What should EPA and NHTSA use to replace benefit cost analysis (BCA)? An alternative tool derived from ecological economics is multi-criteria decision aide (MCDA). This approach to policy analysis takes a wide variety of relevant information into account, and is consistent with the multiple criteria that Congress has directed that EPA and NHTSA address in their rulemaking. The merits of MDCA compared to BCA are detailed in a 2005 paper by Gowdy and Erickson. [OAR-2009-0472-3651.1, pp.7-8] [[See Docket Number OAR-2009-0472-3651.1, p.8 for a table that outlines their comparison.]]

[[UMTRI also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 40-42.]

New York State Department of Transportation (NYSDOT)

The proposal does not appear to give due consideration to the economic benefits of improved fuel economy at the consumer level. It is not reasonable to assume that the only effect of fuel-costs savings will be a rebound effect. The only economic benefit that appears to be considered in the impact analysis is a $0.17/gallon benefit from reducing oil imports. Unfortunately, this anticipated benefit is difficult to comprehend since the DEIS indicates that fuel consumption will increase significantly in the future whether or not the proposed CAFE standards are implemented. [OAR-2009-0472-7531.1, p.3]

EPA Response:

EPA disagrees that benefit-cost analysis is "a dubious tool" in this framework. Benefit-cost analysis can be (and has been) used in situations where not all of the assumptions listed above hold: for instance, it can be used to measure the effects of imperfect competition. EPA's assessment of the benefits and costs is in Preamble Section III.H. Because we believe that benefit-cost analysis is an appropriate evaluation tool, we have chosen not to use multi-criteria decision aid for this rule.

EPA considers a wide range of economic impacts associated with the final rule. For reference, Chapter 8.4 of EPA's RIA and Section III.H.10 of the preamble present a summary of costs, benefits, and net benefits of the rule. The net benefits of EPA's final program consist of the effects of the program on:

- the vehicle program costs (costs of complying with the vehicle CO_2 standards, taking into account FFV credits through 2015, the temporary lead-time alternative allowance standard program (TLAASP), full car/truck trading, and the A/C credit program, and other flexibilities built into the final program),
- fuel savings associated with reduced fuel usage resulting from the program,
- greenhouse gas emissions,
- noise, congestion, accidents,
- other pollutants,
- energy security impacts,
- reduced refueling events, and
- increased driving due to the "rebound" effect.

Imperfect Competition

Organization: James Adcock

In general consumers with differing projections of the "true" future cost of SCC and fuel prices will make differing estimates of the utility of the purchase of a particular vehicle. Analysis that assumes one particular "US-wide" value of SCC or fuel costs will thus reach erroneous conclusions about vehicles Mfgs should be offering consumers – consumers hold a wide variety of beliefs on these subjects and thus Mfgs should, if "free market" forces are at work [which they aren't, due to huge barriers to entry into the Auto Industry -- due in part to NHTSA regulations] provide a wide variety of fuel efficiency vehicles to consumers. But the market doesn't actually work that way. For example Toyotas' great success with the Prius makes it LESS likely not more that other Mfgs will attempt to compete in that segment of the market.

NHTSA assumes that citizen do not understand the cost benefits of higher fuel efficiency but ignores the fact that the vehicle market is not a "perfect market" and Mfgs may not be offering the fuel efficiency vehicles that consumers want. Further, NHTSA regulations and "Grey Market" import restrictions work to make the market even less perfect, since many high fuel efficiency vehicles available overseas are not available to the US citizen.

Contrary to NHTSA statements the US does not in practice represent a "competitive free market" environment compared to the EC market say Great Britain where the consumer has several times as many model choices to choose from. On a stringency adjusted basis EU and Japan fuel economy standards still remains approx . 2X as strict as the US . NHTSA needs to clearly explain why the US is not competitive in being able to offer similar environmental benefits here . "Consumer perfect knowledge leads to informed choice" - this cannot happen if the Mfgs do not in fact provide the option of cars with MPG equal to what consumers want. Consumers cannot buy the car they want in part because NHTSA "Grey Market Laws" prevent importation of most high fuel efficient vehicles built worldwide. In a "perfect market" such barriers do not exist, rather the choice is left to the consumer . Further, the US Auto Market has huge barriers to entry for new competitors due in part to the differences between world EC regulations vs . US specific DOT regulations, and the huge cost of crash testing.

EPA Response:

As discussed in RIA Section 8.1, it is possible that market imperfections on the part of the auto makers may contribute to the existence of the “energy gap.”

Policies influencing consumer purchasing attitudes

Organization:
Michael T. Schade
James Adcock

Comment:

Michael T. Schade

The Energy Paradox presented and discussed several times in the rule is likely among the most important issues in achieving the national fuel consumption and CO2 emission reduction targets. Especially of concern to me is how to encourage a greater public desire for more highly fuel efficient and lower CO2 emitting vehicles. I'm not talking about someone buying a more fuel efficient SUV that will be enabled by this rule but encouraging them to consider trading down to a model that is smaller and even more fuel efficient. Several episodes of oil shortages and oil driven price swings during the 1970's and the price spike 2 years ago demonstrate the transitory nature of purchase decision that place a high value on fuel efficiency. The European experience of continually very high fuel taxes forcing high motor fuel prices and leading to a high priority given to fuel economy in vehicle purchase decisions is demonstrated every day in the nature of the European vehicle fleet composition. Sales estimate premises are now much more transparent than using confidential manufacturer input. But their accuracy is still vulnerable to major dislocations due to customer buying preferences that may abruptly (either on a temporary basis or more permanently) change with fuel price spikes and troughs. This may be the weakest link in the whole current approach in reducing motor fuel consumption by forcing incremental vehicle improvements. The absolute minimum backstop concept partially deals with this risk but only for the domestic automobile fleet and not for imported cars nor for trucks in total. My only recommendation is a predictable and well understood ramping up of motor fuel taxes to a level that will change consumer behavior and create pull through demand for much more efficient vehicles. Preferably, these tax increases would be offset by equivalent tax cuts in other areas. But I understand that much higher gasoline/diesel federal taxes are not now politically achievable so I'd recommend including in this rule a transparent and honest discussion of the risk of not adopting policy targeted towards influencing desired consumer purchasing attitudes. [OAR-2009-0472-7261.1, pp.3-4]

James Adcock:

Lowering the size and weight of vehicles doesn't cause the consumer to buy these smaller vehicles . Rather, the consumer buys smaller vehicles to optimize the total cost of ownership to their financial situation given higher gas prices . We do not believe either tiny vehicles such as Smart or giant vehicles such as Escalade are in the broader public interest of safety nor reasonable fuel economy tradeoffs . CAFE and crash test standards should be developed in a way that makes clear that such extreme size "outliers" are not good consumer choices.

We believe it can be a rational choice on the part of the consumer in terms of morality to risk personal safety by buying a smaller car which is less destructive to the planet and the human race, even while climate change deniers – aggressive drivers - buy aggressive design "Monster Trucks."

We believe it is morally unacceptable in modern society, that a consumer be allowed to buy, and a Mfg be allowed to make, a vehicle KNOWN to have low MPG AND which represents a high fatality risk to the occupants of other vehicles – aka "Aggressive Design ." That NHTSA

continues to allow this represents a failure to rationally regulate the market for either safety or for fuel economy.

EPA Response:

Consumers have different tastes, and choose different combinations of vehicle characteristics. EPA seeks to reduce GHG emissions vehicles while maintaining the quality and variety of vehicles. Consumers have many factors in mind when they choose the vehicles that they buy; switching to a smaller and even more fuel efficient vehicle may not be possible for everyone.

EPA agrees that vehicle sales estimates are not precise due to factors such as those that the commenter mentions. A gasoline/diesel fuel tax is outside the scope of this rule.

EPA's analysis of this rule includes discussion of its impacts in a number of areas, including among others consumer welfare, energy security, climate, other air pollutants, accidents, noise, congestion. Because the baseline is our estimate of the world without the rule, then the effects of not adopting this policy are the negative of the effects of the rule, reported in the rulemaking documents.

5.13.2. Costs Associated with the Vehicle Program

Organization: California Air Resources Board

Comment:

We agree with NHTSA that the incremental increases in average new vehicle costs can be mostly or wholly passed through to consumers, and for this reason also agree with EPA's related assumption that cost increases of this magnitude will not create a fleet turnover issue. Due to the concurrent improvements in fuel efficiency (and lower emissions), the higher vehicle purchase price can be offset by the fuel savings within the typical ownership period of the first owner. Reduced operating costs could make these new vehicles more attractive to consumers who expect fuel prices to remain high or continue to rise. For this reason and based on previous CARB analyses for the Pavley GHG rulemaking, we do not believe that the increased vehicle prices will significantly deter consumers from making new vehicle purchases. In fact, our analysis showed that in early years, new sales would increase slightly as a result of the regulation. Thus, like EPA and NHTSA we believe delayed scrappage or fleet turnover issues should not be a serious concern at the cost levels currently anticipated. [OAR-2009-0472-7189.1, p.9]

[CARB also submitted these comments as testimony at the Los Angeles public hearing. See docket number OAR-2009-0472-7283, pp. 21-27]

EPA Response:

We agree with the comment submitted by CARB that the new GHG standards should not create a fleet turnover or delayed scrappage issue. We also agree that the increased cost of compliant

vehicles can and will be quickly offset by the savings from reduced fuel consumption. We present our "impact on vehicle sales" discussion and our "payback analysis" in section III.H of the preamble and in Chapter 8 of the RIA.

Organization: University of Michigan Transportation Research Institute (UMTRI)

Comment:

Section III.H.2 of the "Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards" is concerned with "Costs Associated with the Vehicle Program." My comments are in support of the indirect cost multipliers (ICM) used by EPA to account for indirect costs. As a subcontractor to RTI, I assisted EPA in developing the methodology used to estimate indirect cost multipliers and retail price equivalent multipliers (RPE). [OAR-2009-0472-3651.1, p.4]

The costs to automakers of complying with the proposed regulations should be defined to include only those costs that change due to the regulations. When compliance necessitates adding equipment to the vehicle, the compliance costs include direct manufacturing costs associated with new technology (materials and direct production labor) plus the change in those indirect cost items that are affected (e.g., engineering development cost). [OAR-2009-0472-3651.1, p.4]

In most cases, direct costs can be estimated without difficulty or controversy. However, indirect costs are more difficult to estimate and have been the subject of considerable controversy. The methodology guides EPA analysts in identifying indirect costs that are likely to be affected by regulations. The methodology is supported by estimates of RPE and ICM for several automakers that we derived from recent annual financial reports and other public data. [OAR-2009-0472-3651.1, p.4]

The EPA uses a range of indirect cost multipliers (ICM), depending on the timing of the application of the regulation and the complexity of the technology that is anticipated to be necessary. The multipliers range from 1.11 to 1.64 in the short term and from 1.07 to 1.39 in the long term. In the ICM, the numerator is direct plus indirect cost and the denominator is direct cost. The ICM covers direct and indirect costs only; no provision for profits is made. However, the RPE adds profit to the numerator, so the RPE is greater than the ICM. It has been argued that regulatory agencies should use an RPE that is greater than 2.0, which would imply an ICM of 1.90 or higher (assuming a 5 percent profit computed on sales—2.00 X .05 = .10; 2.00 - .10 = 1.90). [OAR-2009-0472-3651.1, p.4]

How reasonable is an RPE of 2.00 or higher? To answer this question, consider GMs financial results for 2004-08, shown in Table 1. [OAR-2009-0472-3651.1, p.4]

GM is an easy case to study, because it provides information in its annual reports on contribution costs in addition to the standard GAAP information on cost of sales. Contribution costs are closer to direct costs than are cost of sales. [OAR-2009-0472-3651.1, p.4]

In its annual reports, GM says it considers contribution cost to be costs that vary directly with production. They consist of material cost, freight, and policy and warranty expenses. There are two differences between GM's contribution costs and the EPA's definition of direct costs. GM explicitly excludes direct production labor from contribution costs, whereas the EPA's definition of direct costs includes direct production labor. GM includes freight and warranty in contribution costs, which the EPA treats as indirect costs. GM does not report its direct production labor costs, but we estimate them to be about $9 per year. GM reported warranty and freight costs of $9.7 billion in 2007. Thus, these two expense categories roughly offset each other, meaning that, for GM, direct costs are roughly the same as contribution costs. [OAR-2009-0472-3651.1, pp.4-5]

Since GM had losses in each of these years, we also computed hypothetical RPE multipliers that would result if GM had the same cost structure but earned a 5 percent profit. These hypothetical RPE multipliers are 1.50 to 1.58. In either the actual or the hypothetical case, the RPE multipliers are substantially lower than 2.00. [OAR-2009-0472-3651.1, p.5]

The indirect cost multipliers that EPA uses in the preliminary rule give sensible and fact-based guidance on how indirect costs ought to be estimated. [OAR-2009-0472-3651.1, p.5]

[[UMTRI also submitted these comments as testimony at the Detroit public hearing, See docket number EPA-HQ-OAR-2009-0472-6185, pp. 37-40.]

EPA Response:

The Agency appreciates these comments and agrees with them.

Organization: Chew, Yuli

Comment:

I support the assumption of 4% for the cost and effectiveness estimates for the diesel engine and after treatment system; however, I think a higher improvement rate may be attainable considering the fact that the proportion of diesel will jump to 4% and 10% of the cars and trucks respectively. In Model Year 2011, diesel technologies for truck technology classes were allowed to be applied at a 4 percent combined (for DSLT and DSLC) phase-in cap for MY 2011 to account for the higher application rates observed in the submitted product plans and diesel's favorable characteristics in truck applications. [OAR-2009-0472-7042.1, p.2]

As to whether EPA should use a 4% or 6% per year increase in standards, I feel that a 6.0% is closer to what is specified in the CARB Regulation. This will helps to achieve a fleet average of 36.9 mpg or 241 g/mi of CO_2 equivalent in 2016. This is more closely related to CARB's target of achieving 43.4 mpg for cars and 26.8 mpg for trucks, or 205 g/mi for cars and 332 g/mi of trucks in 2016. [OAR-2009-0472-7042.1, p.2]

EPA Response:

EPA believes that diesel technology has a role in the future light-duty fleet. Although the modeling we have done using the OMEGA model has not shown a move from gasoline technology to diesel technology, that does not mean that EPA is prohibiting such an outcome. The rule allows manufacturers to comply with their respective fleet average standards using any technology they choose to utilize. EPA continues to believe that the cost estimates and effectiveness estimates used in the proposal are appropriate for the final rule.

Regarding the 4% or 6% per year increases in standards, the commenter states a belief that the 6% per year alternative would be more representative of the CARB regulation (*i.e.*, Pavley I levels). As EPA's analysis shows (see Chapter 3 of the RIA), the national GHG standard results in vehicle sales in California of federally compliant vehicles that have fleet average GHG emissions equal to the fleet average that would be achieved under the California program In their comments on the proposal, the California Air Resources Board agreed that the standards presented in this rulemaking align with California's Pavley greenhouse gas emissions standards, and ultimately arrive at the same stringency as California's standards in MY 2016.

Organization: Chew, Yuli; State of New Jersey

Comment:

For the cost estimates for the various hybrid systems, NHTSA use a figure of $320 per KW-hr for 2012 -2016 as compared to $600 per Kw-hr for 2011 Model Year. I feel that a lower figure of about $260 per KW-hr should be more reasonable. See page 47 of Report of the ARB Independent Expert Panel 2007 prepared for State of California Air Resources Board. http://www.arb.ca.gov/msprog/zevprog/zevreview/zev_panel_report.pdf Similar to the price of solar panels, the price dropped drastically if they are mass produced. [OAR-2009-0472-7042.1, p.2; OAR-2009-0472-7109.1, p.9]

EPA Response:

We disagree that a $260 per kW-hr is a more appropriate cost than the $320 figure used given the timeframe of analysis. Our $320 figure is based on current (2012 timeframe) best estimates of around $500 per kW-hr and application of manufacturer learning to arrive at an estimated $320 figure in the 2015/2016 timeframe. Note that the Report of the ARB Independent Expert Panel 2007 showed $/kW-hr ranges of $340-420/kW-hr for an annual production of 20,000 batteries per year to $240-280/kW-hr for 100,000 batteries per year. No timeframe is provided for these ranges. It is not known currently what level of electric vehicle sales (and, hence, what level of battery production) will occur within the regulatory timeframe. The agencies do know that the new standards will not force introduction of electric vehicles. Hence, the $500/kW-hr in 2012 and $320/kW-hr in 2015 estimates used are not inconsistent with the estimates of the ARB Expert Panel. Therefore, we continue to believe that the estimates we used in the proposal are acceptable for the final rule, especially in light of the very low penetration of technologies dependent on electrification of motive power (i.e., hybrids, electric vehicles, plug-ins).

Organization: Devon Energy Corporation; Donald F. Shaw; C. M. Spurgeon; Neil Stanton

EPA Response to Comments

Comment:

The proposed regulations will harm our economy. A few years ago, the National Highway Safety Administration (NHTSA) estimated that increasing fuel economy standards to 35 miles per gallon by 2020 would cost the car companies $114 billion. (See Detroit News, "Fuel Plan Would Cost Big Three" (March 1, 2007). Inexplicably, today NHTSA claims that achieving the 35 miles per gallon fleetwide standard by 2016, four years earlier, would cost only $60 billion. (75 Fed. Reg. 49479). This change from NHTSA is not credible. The cost of technology-forcing regulations do not decrease by half as a result of companies only having half the time to comply with the regulations. [OAR-2009-0472-10450, p.1; OAR-2009-0472-7270.1, p. 3; OAR-2009-0472-7270.1, p. 3; OAR-2009-0472-10169, p.2]

EPA and NHTSA's plan will increase costs for car companies and further reduce auto company jobs. Higher priced cars and trucks will make life more difficult for American families who need affordable transportation options. [OAR-2009-0472-10450, p.1; OAR-2009-0472-7270.1, p. 3; OAR-2009-0472-7270.1, p. 3; OAR-2009-0472-10169, p.2]

EPA Response:

We disagree that the regulations will harm our economy. In fact, we believe that the new standards will help our economy by saving consumers and businesses money currently spent on fuel which can then be spent on other items or invested in ways that boost our economy. The standards will also benefit the economy by increasing our energy security and reducing our reliance on foreign oil. As for cost estimates and the changes between the 2011 rule and this rule, it is difficult to address this comment given that the commenter does not question specific cost estimates. That being said, it is important to note the difficulty associated with cost estimation and the ongoing effort made by both EPA and NHTSA to use the best available cost information at any given time. Since publication of the 2011 final rule, both agencies have sought to continually improve cost estimates – more thorough consideration given to future product planning when adding technology in intermediate years, better cost estimation through FEV tear down studies like those conducted by FEV under EPA contract, application of learning curve effects to more closely estimate cost reductions over time -- which have resulted in many cost estimates being lowered. NHTSA and EPA would be remiss not to revise cost estimates in light of newer, better information, whether that information increases or decreases those estimates. Note also that the auto makers did not challenge the newer cost estimates to any significant degree.

Regarding reducing auto company jobs and making life more difficult for American families, again both agencies disagree. Instead, we believe that the new standards provide American families with more affordable transportation options since the fuel savings associated with the new standards quickly offset increased new vehicle costs (within the first month for a vehicle purchased via a typical 5 year loan – see sections III.H.5 and IV of the preamble for more detail). These savings are expected to increase vehicle sales relative to sales without the new standards (again see sections III.H.5 and IV of the preamble for more detail) which, in turn, would be expected to increase rather than decrease auto maker jobs.

Organization: Dillard, Joyce

Comment:

In the end, the greenhouse gas emission changes are about a financial system. It affects the daily lives of citizens and impacts their income and economic capabilities. [OAR-2009-0472-7226.1, p. 2]

In Los Angeles, California we have Port of Los Angeles truck drivers feeling the pinch of the new monopoly over the greenhouse gas reductions. The free market has been diminished for more bureaucracy and finite control without the proper regulatory process. [OAR-2009-0472-7226.1, p. 2]

EPA Response:

EPA agrees that the daily lives of citizens are impacted by greenhouse gas emissions, and that the joint rulemaking for a national program to control greenhouse gases and fuel economy from light-duty vehicles will impact citizens. A closer look at the comments submitted by the commenter suggests that the commenter appears to be commenting on two topics: public availability of information on greenhouse gas impacts ("What is needed is a Clearinghouse for the Depository of Scientific and Factual Data as a springboard for industry, individuals, students, parents and children to buy into their future. Access to correct information is a key factor for future results to any environmental issue. Peer-reviewed information is necessary." (see page 1)); and cap and trade proposals ("In California, the State Legislature has passed AB 32 California Global Warming Solutions Act of 2006 for the reduction of greenhouse gases and the implementation of Cap and Trade, a tax. The State of California Natural Resources Agency is processing the CEQA Rulemaking for SB 97 Greenhouse Gas Emissions, a related bill, which will implement the CEQA California Environmental Quality Act for this process. The Cap and Trade tax is under the purview of a regional entity-Western Climate Initiative WCI, an unelected body, in a non-transparent process. We have no benefit of financial forecasting, at this point, and no basis for financial responsibility." (see page 1)).

As regards the former issue, the agencies have made every effort to be as transparent as possible in developing the standards being put into place. That information is, primarily, supportive of the standards being set rather than being scientific information surrounding the impact of greenhouse gases on climate change. The agencies have been tasked with creating a national program to address greenhouse gas emissions and fuel eonomy, not to determine the impact of greenhouse gases on climate change.

As regards the latter comment -- regarding cap and trade proposals -- the issue is not germaine to the joint rulemakings as cap and trade is not part of either EPA's or NHTSA's programs.

Organization: Brooks, Dawn

Comment:

EPA Response to Comments

I am concerned the costs of the new technology required to produce lower emissions are inaccurate and will be passed onto me, the consumer. According to the report, Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards (2009), the average incremental cost of the program is $1,409.00, and is even higher for light trucks at $1,641.00 (p.253). The increased cost is a result of the new emission standards forcing "manufacturers to apply considerable additional technology" (Proposed Rulemaking To Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 2009, p. 253). This plan merely guesses on how manufactures are going to implement the proposed policy as the report also states, "NHTSA cannot predict how manufacturers will respond to the proposed standards" (Proposed Rulemaking To Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 2009, p. 253). If the agencies involved do not understand what procedures and technology the automobile manufacturers will use to implement the requirements of the program, how can the agencies assess an accurate dollar amount for incremental costs?

Furthermore, the projected costs do not include higher sales taxes, insurance increases, and other incidental fees resulting from more expensive vehicles. Maintenance costs will increase adding even more burdens to the consumer as the technology will be more complicated and time consuming for mechanics to repair. Consequently, incremental projected increased costs do not simply include the new technology added by the automobile manufacturers as stated in the report.

The costs of this program, along with the associated costs added to a higher priced, more environmentally friendly vehicle will substantially increase consumer expenses for transportation.

I respectfully request the agency take a more thorough look at projected costs of this proposed program. I understand the benefits; now make me understand the true costs. Do not pass proposed rule EPA-HQ-OAR-2009-0472 until the automobile manufacturers present their added costs to the redesigned vehicles to fulfill the 2016 lower emissions and increased fuel efficiency standards. Manufacturer figures will give the agency a more comprehensive understanding of costs to the consumer as a result of these new regulations. [EPA-HQ-OAR-2009-0472-3851, pp 1-2]

EPA Response:

EPA cannot predict what level of costs will be passed on to consumers through increased vehicle prices. EPA does not doubt that some and perhaps all of the costs will in fact be passed on. However, EPA doubts that price increases will occur equally on all vehicles as auto makers will determine which vehicles can best absorb increased prices and which cannot. Importantly, the costs mentioned by the commenter are not the actual cost estimates associated with the proposal. Those mentioned are from sensitivity analyses conducted by NHTSA looking at the costs associated with a 5%/year increase in fuel economy. The proposal actually called for a 4%/year increase in fuel economy and, therefore, estimated lower costs ($1,020 and $1,127 for trucks and

cars, respectively) than the 5%/year increase. Further, the estimates for the final rule are lower than those for the proposal.

Regarding the agencies' abilities to estimate costs given a "lack of understanding" over what auto manufacturers will use to comply with the regulations, EPA disagrees with this comment. In fact, the agency understands very well the technologies at manufacturer's disposal to meet the regulations. However, there are so many different technologies that can be used ranging from engine friction reductions to improved valve train designs to turbocharging with engine downsizing to more efficient fuel systems to new transmissions to hybridization, etc., that it is impossible to know for sure what will be done short of mandating what will be done. Neither EPA nor NHTSA wish to mandate a solution to improving fuel efficiency. Instead, auto manufacturers will consider all the options and how best to satisfy their customers in making their own determination. That said, both agencies have made use of rigorous engineering analysis to estimate future technology mixes in making our best estimates of future technology costs.

Regarding higher sales taxes and insurance costs on new vehicles, the comment is accurate that such costs have not been considered in the formal cost estimates (they have been considered in our estimates of consumer payback). We have included costs associated with higher warranty expenditures through our indirect cost multipliers but have not included costs associated with increased maintenance. Importantly, we do not know that net maintenance costs for consumers will increase or decrease. With respect to the A/C program, we believe that maintenance costs will decrease since leakage should be largely eliminated.

Regarding the rule resulting in increased expenses for transportation, again EPA disagrees. Please refer to our payback analysis which shows that fuel savings will outweigh up front costs within three years for people purchasing new vehicles with cash. For those purchasing new vehicles with a typical five-year car note, the fuel savings will outweigh increased costs in the first month of ownership.

Regarding the request that EPA wait until auto manufacturers have presented their cost estimates, the Agency has given the auto makers an opportunity to respond to its cost estimates and, while some auto makers submitted comments on some aspects of the cost estimates, the auto makers have not challenged them in any meaningful way. Therefore, EPA believes that the cost estimates for the final rule are the best available estimates at this time.

Organization: American Council for an Energy Efficient Economy

Comment:

The agencies also worry that their technology cost estimates may be too low (TSD 4-2). Accuracy of cost estimates is a legitimate concern in a wide array of rulemakings but is best handled through a sensitivity analysis. It should not be used to impugn the validity of the proposed standards.

EPA Response:

As noted in the previous response, EPA has given the auto makers an opportunity to respond to its cost estimates and, while some auto makers submitted comments on some aspects of the cost estimates, the auto makers have not challenged them in any meaningful way. Therefore, EPA believes that the cost estimates for the final rule are the best available estimates at this time.

5.13.4. Reduction in Fuel Consumption and its Impacts

Organization: Competitive Enterprise Institute

Comment:

II. The proposed standards will increase the risk of death and injury related to auto accidents. GHG standards are fuel economy standards. The proposed GHG standard is just a fuel economy standard by another name. EPA comes very close to acknowledging as much, explaining that the rule aims to reduce emissions by increasing fuel economy: [[commenter quotes EPA on OAR-2009-0472-7281.1 p.3]] The only difference between EPA's proposed rule and a 100% "pure" fuel economy standard is that the rule seeks to reduce leakage of air conditioning-refrigerant GHGs. However, the rule also seeks to reduce "the consumption of fuel to provide power to the A/C system." So even with respect to vehicular air conditioning systems, EPA's proposal targets fuel economy. As the rule states, 95% of all GHGs emitted by light duty vehicle are CO2 emissions, and "the only way at present to reduce tailpipe emissions of CO2 is by reducing fuel consumption. [OAR-2009-0472-7281.1, p.2]

EPA Response:

We disagree that the standards will increase the risk of death and injury related to auto accidents. Please refer to the preamble section II.G and EPA's RIA section 7.6 for more detail on this issue.

There are two aspects to the A/C program: reduced refrigerant loss through improved system design (direct GHG reductions); and reduced power consumption to operate the A/C system (indirect GHG reductions). The latter of these results in reduced CO2 emissions since less fuel is consumed to power the A/C system. The former -- reduced refrigerant loss – results in reductions in far more potent greenhouse gases. EPA does not disagree that the new GHG tailpipe standards are, in effect, new fuel economy standards given that the only way at present to reduce tailpipe emissions of CO2 is by reducing fuel consumption. That does not alter the fact the greenhouse gases are pollutants under the CAA, and that, having made the findings that emissions of these pollutants may endanger public health and welfare and that emissions of these pollutants from new motor vehicles causes or contributes to that endangerment, EPA has a mandatory legal duty to promulgate emission standards for those vehicles under section 202 (a)(1). State of Massachusetts v. EPA, 549 U.S. at 533. For the same reason, it is legally irrelevant that CAFE standards directly regulate vehicular fuel economy. Id. at 531-32._The agencies have chosen to discharge their respective responsibilities in this joint rulemaking so that a National Program can be established to the benefit of all stakeholders. See id. at 532 ("But that DOT sets mileage standards in no way licenses EPA to shirk its environmental responsibilities

… The two obligations may overlap, but there is no reason to think the two agencies cannot both administer their obligations and yet avoid inconsistency").

Organization: Consumer Federation of America

Comment:

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 106-107.]]

In particular, EPA and NHTSA should balance the three goals in the underlying statutes of technical feasibility, economic practicability, and the need to conserve energy, and the statutes really are in agreement here, by setting the standard at the mid point of the range between maximum economic benefit and maximum practicable environmental benefit.

In addition, they should recognize the higher resale value of more fuel efficient vehicles. They should properly value fuel savings by removing the rebound effect from the consumer private welfare analysis and setting it at a lower level in the societal analysis. Rebound has no business in the private valuation.

They should recognize consumer willingness to change their demand for vehicle attributes. The American consumer has shown they are willing to change.

They should assign significant national security value to reducing oil consumption.

EPA Response:

Our rulemaking recognizes consumer willingness to change their demand for vehicle attributes. Should enough consumers demand any given attribute, then presumably a manufacturer(s) will step forward to provide it. The rules, however, do not mandate vehicle attributes from the supply-side. Manufacturers may achieve their respective standards by any means they choose. We have made every effort to ensure that consumers will continue to find the attributes they currently demand within the future fleet all while consuming less fuel. EPA did this by building technology packages for each vehicle type (refer to Chapter 1 of EPA's RIA) that maintained in the judgment of staff engineers the key performance characteristic (zero to 60 mph acceleration). Each subsequent package generally costs more, provides greater fuel efficiency, and maintains performance relative to the package before it and, hence, the baseline or current vehicle. Should consumers demand more from manufacturers -- that is, vehicles that consume even less fuel at the expense of some vehicle attributes -- then some manufacturers may well deliver those vehicles. This would be a demand-side driven outcome.

We have assigned considerable national security value to reducing oil consumption. Please refer to our analysis as presented in section III.H of the preamble and Chapter 8 of the RIA.

Lastly, EPA disagrees with the comment that rebound mileage should be set lower or even removed from the fuel savings analysis. Many historical studies have shown a correlation

between changes in total VMT and changes in fuel economy, even when other factors such as gasoline prices are taken into account. As we described in section II of the joint preamble and Chapter 4 of the joint TSD, recent literature suggests that the rebound effect is 10% or lower, whereas the larger body of historical studies suggests a higher rebound effect. Therefore, we believe a rebound effect of 10% is appropriate for this rulemaking.

Organization: National Automobile Dealers Association (NADA)

Comment:

In the National Program proposal, NHTSA may have inappropriately shifted from its historically justified 15-30 percent rebound effect range to a proposed 10 percent. While some justification may be found to support moving toward the lower end of the historical range, 10 percent does not appear to be adequately justified. [OAR-2009-0472-7182.1, p.11]

EPA Response:

EPA and NHTSA disagree with the commenter that we did not justify our rationale for shifting our quantified estimate of a rebound effect to 10 percent. As described in detail in the Joint TSD Chapter 4, a summary of the existing literature indicates that a majority of the studies estimated that the historical value for the rebound effect is between 10 and 30 percent. Furthermore, newer research using more recent data suggest that the rebound effect is declining over time and will continue to decline in the future, particularly when future projections of income, gasoline prices, and urbanization are taken into account. Based on this body of evidence, we believe there is adequate justification to support reducing the rebound effect to 10 percent for this rulemaking.

Organization: National Automobile Dealers Association (NADA)

Comment:

The National Program proposal is being developed during one of the most significant economic turndowns in the history of the auto industry. Manufacturers and dealers alike are continuing to experience dire and volatile economic impacts. Where just two years ago new vehicles were being sold in the U.S. at an annualized rate of over 16 million units, today that rate has fallen to an estimated 10.2 million. In that same short time frame, thousands of new car dealers have gone out of business and overall dealership employment has dropped by some 100,000 and 200,000. Two large domestic automakers and their dealers owe their very existence to massive federal government intervention. New competition is expected soon from China, from India, and even from new domestic startups. Competition is good and dealers look forward to selling those vehicles. However, NHTSA and EPA must recognize and fully account for these economic and competitive realities when finalizing the National Program to ensure that, to the greatest extent possible, dealership employment and viability is protected. [OAR-2009-0472-7182.1, p.4]

Regarding vehicle affordability, the critical importance of fuel price and availability cannot be overstated. New vehicle purchasers typically aren't early adaptors of high priced new technologies, nor are they so well off as to ignore fuel efficiency even when fuel prices are high.

Instead, the vast majority of new vehicle purchasers are payment buyers with multi-year loans who only become keenly interested in fuel economy when fuel prices skyrocket. Clearly, it is very difficult to forecast fuel prices in a free market. By relying on conservative fuel price forecast assumptions, the National Program will at worse achieve better fuel economy and GHG benefits should prices prove to be higher than forecast. On the other hand, should fuel prices prove to be lower than forecast, the result could be a scenario of high priced new vehicles sitting unwanted and unaffordable on dealers lots, with unacceptable negative consequences. [OAR-2009-0472-7182.1, p.4]

[National Automobile Dealers Association also submitted these comments as testimony at the New York public hearing, See docket number EPA-HQ-OAR-2009-0472-4621, pp. 85-88.]

EPA Response:

The agencies reasonably believe that the new standards will result in increased vehicle sales (see sections III.H.5 and IV.G.7 of the preamble, and chapter 8 of EPA's RIA for more detail) and, as such, should ensure that dealership employment will not decrease as a result of this rule. Further, our analyses are based on the best available predictions of future fuel prices (AEO 2010 Early Release) which range from $2.61/gallon in 2012 to $3.07/gallon in 2016 (expressed in 2007 dollars and including taxes). While such prices are not low by traditional U.S. standards, they are by no means high.

5.13.5 Impacts on U.S. Vehicle Sales and Payback Period

Organization:

BMW of North America, LLC (BMW)
State of New Jersey
Mr. Richter - Environmental Capital Partners
Shaw, Donald F.
Chew, Yuli
US Steel Corporation
University of Pennsylvania, Environmental Law Project
National Automobile Dealers Association

Comment:

BMW of North America, LLC (BMW)

Now, as EPA and NHTSA have noted in the proposal, it's important that consumers retain a full range of vehicle choices and you've designed the calculation methods to preserve vehicle [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, pp. 132.] choice, which is very good. For auto manufacturers to meet the aggressive greenhouse gas and CAFE standards proposed in this rulemaking, compliance flexibility and accommodation for different size vehicles must be provided. [These

comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 133.]

State of New Jersey

The Agencies requested commenter input on a number of related topics regarding how the proposal balances the needs of consumers with the need to reduce greenhouse gas emissions from one of the nation's most significant greenhouse gas emission sources. The Department feels that USEPA and NHTSA have crafted the proposal in a way that will ensure that consumers will continue to have the variety and choice in vehicle models they have come to expect. The standards provide manufacturers with significant flexibility in meeting the proposed greenhouse gas reductions, and New Jersey is confident that the technologies to reduce vehicle greenhouse gas emissions exist in the market today. The phase-in of the standards between 2012 and 2016 allows manufacturers seven years to incorporate these technologies into greater numbers of vehicles. [OAR-2009-0472-7109.1, pp.5-6]

Mr. Richter - Environmental Capital Partners

And I think as I mentioned as a member of an investment firm that specifically targets the environmental [EPA-HQ-OAR-2009-0472-4621, p.160] I mean, we feel like this will be the dominant asset in the years to come. I really want to underscore the economic argument as has been used in the past against increasing mileage standards and it may be the single most important reason for increasing CAFE standards, and I would say there are two real reasons for this. [EPA-HQ-OAR-2009-0472-4621, p.161]

Al Gore famously pointed out that our fleet would be unable to be sold in China. I think it's pretty clear that we need to learn from the past and not make that mistake again. You know, I'm not going to sit here and predict what kind of cars will be sold in the future, but I think all of us in the room will be pretty certain on which ones won't be sold, and that's the ones that are relying on decades old technology, we will be moving forward, and high standards that we can put in with the CAFE standards will increase competitiveness and this is particularly true as it relates to resource efficiency. This resource efficiency pushes innovation, innovation creates economic opportunity here at home. Last week, GM announced [EPA-HQ-OAR-2009-0472-4621, p.162] plans to invest $230 million in four Michigan plants to build the Cruze and the Volt, restoring 500 jobs. I mean, there are so many cascading effects that come from investing in innovation. [EPA-HQ-OAR-2009-0472-4621, p.163]

Shaw, Donald F.

The imposition of these standards will impose severe financial hardships on the already economically challenged Auto industry, resulting in the massive loss of jobs and disruption to the entire economy. People will not buy the new impractical cars, but will keep their “useful” autos until they die. [OAR-2009-0472-7270.1, p. 1]

Our economy is already fragile, why risk further deterioration? How much additional government subsidy dollars are required to aid the auto industry? [OAR-2009-0472-7270.1, p. 1]

Chew, Yuli

As to the economic costs, I believe that that buyer will be more concerned with the full life-cycle costs, personally value savings as the most important issue. This is in line with the CARB's Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, Final Statements of Reasons, August 4, 2006, it stated that "cost effective" is defined as "Economical to an owner or operator of a vehicle, taking into account the full life-cycle costs of a vehicle. [OAR-2009-0472-7042.1, p.6]

US Steel Corporation

In any case, the application of these aggressive fuel economy standards will require vehicle manufacturers to apply new technology, including advanced materials (including aluminum, magnesium, composites, and advanced high-strength steels) to vehicles, the sum total of which will raise vehicle prices and slow down sales accordingly with negative consequences to the general economy. [OAR-2009-0472-7197.1, pp.6-7]

University of Pennsylvania, Environmental Law Project

3. Expected Costs of Implementation of the Proposed Rule
As previously mentioned, some groups worry about the economic costs of rule implementation. They argue that the proposed rule could add too much to the price of new cars. This will lead, they say, to people sticking with their older, gas-guzzling cars instead of buying new ones, thereby undermining the primary goal of the rule of lowering vehicle emissions [OAR-2009-0472-7286.1, pp. 20-21].

However, most stakeholders, including the auto industry and Auto Dealers Association support the rule and agree that this standard can be met without undue costs. They also point to the benefits of a predictable national standard that will help to lessen uncertainty for the auto industry when they develop new models, and lower compliance costs by avoiding a patchwork of rules between the states. Furthermore, it will allow them time to build improvements into new models during the normal production and design process, which will minimize the additional costs imposed. [OAR-2009-0472-7286.1, p. 21]

National Automobile Dealers Association

Regarding vehicle affordability, the critical importance of fuel price and availability cannot be overstated. New vehicle purchasers typically aren't early adaptors of high priced new technologies, nor are they so well off as to ignore fuel efficiency even when fuel prices are high. Instead, the vast majority of new vehicle purchasers are payment buyers with multi-year loans who only become keenly interested in fuel economy when fuel prices skyrocket. Clearly, it is very difficult to forecast fuel prices in a free market. By relying on conservative fuel price forecast assumptions, the National Program will at worse achieve better fuel economy and GHG benefits should prices prove to be higher than forecast. On the other hand, should fuel prices prove to be lower than forecast, the result could be a scenario of high priced new vehicles sitting unwanted and unaffordable on dealers lots, with unacceptable negative consequences.

EPA Response:

EPA and NHTSA have included a number of flexibilities in the rule to reduce the costs of implementation and to increase the options that auto makers have for achieving the standards. We have also considered the lead times for auto makers to comply with the standards. The technologies analyzed in this rule are, generally, already available. EPA expects that auto companies will continue to pursue new technologies. EPA's Preamble Section III.H.5 and RIA Section 8.1.3 estimate a payback period of under 3 years for the fuel-saving technologies to comply with the standards. If consumers consider at least 3 years of fuel savings when buying vehicles, then the new vehicles should be more attractive to them than existing vehicles, and sales might increase, as estimated in the analyses found in these sections.

EPA's benefits analysis incorporates the life-cycle costs and fuel savings, to reflect the effects of the vehicles over the years. Because (as discussed in Response to Comments Section 4.5.1) the evidence is uncertain on the role of fuel economy in consumer vehicle purchases, EPA assumes, in its vehicle sales impact analysis, that consumers consider five years' worth of fuel savings when buying a vehicle. As also discussed in Response to Comments Section 4.5.1, the role of fuel savings in vehicle purchase need not be the same as the actual savings that will occur.

5.13.6. Non-Greenhouse Gas Health and Environmental Impacts

Organization: Environmental Defense Fund
Institute for Policy Integrity at New York University School of Law
University of Pennsylvania, Environmental Law Project
South Coast Air Quality Management District

Comment:

Environmental Defense Fund

To maximize the benefits of the final standards, it is essential to fully account for the extraordinary and far-reaching protections that result from reducing heat-trapping emissions. Accordingly, the full range of environmental, social, and economic impacts of greenhouse gas emissions should be taken into account when calculating the societal costs of carbon. Where impacts cannot be quantified, federal policy makers should present a transparent qualitative analysis along with a recognition that monetized benefits are likely to be underestimates.

The co-benefits of the proposed standards, such as the health benefits from the reductions in smog-forming air pollutants, must also be incorporated into the economic analysis. And the analysis must not rely on flawed economic assumptions that diminish the value of protecting future generations.

Indeed, we have a solemn duty to provide a secure future for my generation and those that follow. The final rule must reflect this responsibility through appropriate economic

assumptions while also relying on ethical considerations beyond the scope of economic analysis alone.

[Comments are from LA Testimony, OAR-2009-0472-7283, pp.72-79]

Institute for Policy Integrity at New York University School of Law

Uses of the Social Cost of Carbon:
Central estimates of the social cost of carbon should not be used in optimization models, and should not replace traditional regulatory impact analysis for GHG emissions reductions. While incorporating ancillary benefits directly into the SCC is likely to prove difficult, the interagency group should provide guidance on the types of ancillary benefits typically associated with GHG reductions. [OAR-2009-0472-7246.1, p. 2] [See OAR-2009-0472-7246.1, pp. 39-44 for discussion and commenter recommendations related to the uses of the social cost of carbon.]

Ancillary Benefits:
There is a significant literature showing the relationship between greenhouse gas reductions and a host of ancillary benefits or "co-benefits." Because rules that control greenhouse gas emissions will often end up reducing fossil fuel combustion, emission of a range of conventional pollutants associated with fossil fuels can be expected to decline in the face of GHG regulation. Reductions in particulate matter, nitrogen oxides, sulfur dioxides, volatile organic compounds, and other pollutants can be anticipated to accompany GHG controls. [OAR-2009-0472-7246.1, p. 41]
For example, measures that increase energy efficiency or encourage clean energy generation will also lead to reductions in local air pollutants, with attendant benefits for human health and ecosystems. Other ancillary benefits include reduced ocean acidification and increased forest preservation. [OAR-2009-0472-7246.1, p. 41]

The magnitude of such ancillary benefits may be significant. For example, a forthcoming working paper estimates that representative federal climate legislation would result in health-related co-benefits of $3 to $9 per ton of carbon dioxide avoided (due to reductions in conventional air pollutants). Other studies, using different methodologies, have found similarly large benefits. Because the ancillary benefits of greenhouse gas reductions could represent an important component of total benefits, it is essential for rulemakings that use the interagency SCC estimates not to omit significant ancillary benefits. [OAR-2009-0472-7246.1, p. 42]

One mechanism to take ancillary benefits into account would be to imbed a default estimate of ancillary benefits within the SCC. An estimate of $5-$10 for ancillary benefits could be added directly to the SCC. Incorporating these ancillary benefits directly into the SCC would ensure that they were accounted for in regulatory analysis. [OAR-2009-0472-7246.1, p. 42]

However, because different rules will have different effects on ancillary pollutants, directly incorporating a default ancillary benefit estimate into the SCC is a second-best approach. Transportation rules may have different ancillary effects than rules governing power plants. Some rules may be directly targeted at reducing a conventional pollutant, so incorporating an "ancillary" effect in the SCC could result in double counting. For these reason, simply including

a default assumption concerning ancillary benefits will skew the analysis in some cases. [OAR-2009-0472-7246.1, p. 42]

If such a default assumption is not included, it is important for the interagency group to clarify that GHG reductions are often accompanied by ancillary benefits, and also to provide some guidance for agencies to ensure that they identify and take account of relevant ancillary effects. Citation to the literature on ancillary benefits associated with GHG reductions, as well as a default list of likely ancillary effects of GHG reductions, and perhaps a default value in a "typical rule," could also be provided by the interagency group to give guidance for future rulemakings. [OAR-2009-0472-7246.1, p. 42]

We recommend that the interagency group give explicit direction to agencies on how to account for ancillary benefits associated with GHG reductions. [OAR-2009-0472-7246.1, p. 42]

University of Pennsylvania, Environmental Law Project

NHTSA has not monetized reductions in toxic air pollutants due to the proposed standards (a benefit), nor potential reductions in vehicle performance or utility (a cost) that might result from the proposed standards. However, by any metric, NHTSA expects that the benefits of the proposed standards will vastly outweigh the costs. [OAR-2009-0472-7286.1, p.16]

South Coast Air Quality Management District

The South Coast AQMD is the nation's largest regional air pollution district, and we appreciate this opportunity to testify on this joint rulemaking.

The AQMD staff strongly support the proposed greenhouse gas emission standards and timeline. The proposed emission standards and companion fuel economy standards will result in a significant reduction in greenhouse gas emissions as well as provide crucially important co-benefits in reducing criteria emissions in support of attainment of federal and state air quality standards for ozone and fine particulates.

Given the strong correlation of rising temperature and increased ozone levels, it is especially germane that this hearing is being held in one of the nation's most polluted air basins.

There are over ten million registered light-duty vehicles in the South Coast Air Basin. Reductions in fuel use associated with the standards proposed will therefore have a direct and tangible benefit in terms of public health and welfare in our region.

[Comments are from LA Testimony, OAR-2009-0472-7283, pp.59-60.]

EPA Response:

EPA agrees with commenters that it is important to quantify the non-GHG health and environmental impacts associated with the proposed standard because a failure to adequately consider these ancillary impacts could lead to an incorrect assessment of their net costs and

benefits. Moreover, co-pollutant impacts tend to accrue in the near term, while any effects from reduced climate change mostly accrue over a time frame of several decades or longer.

In this final rule, EPA quantified and monetized the health and environmental impacts related to both PM and ozone in its regulatory impact analysis (RIA), based on changes in ambient air quality as determined by full-scale photochemical modeling. Although this modeling was not possible in the timeframe for the proposal, EPA did perform this modeling for the final rule, as described below.

To model the ozone and PM air quality benefits of the final rule, EPA used the Community Multiscale Air Quality (CMAQ) model (see Chapter 7.2 of the RIA that accompanies the final rule for a description of the CMAQ model). The modeled ambient air quality data served as an input to the Environmental Benefits Mapping and Analysis Program (BenMAP). BenMAP is a computer program developed by EPA that integrates a number of the modeling elements used in previous RIAs (e.g., interpolation functions, population projections, health impact functions, valuation functions, analysis and pooling methods) to translate modeled air concentration estimates into health effects incidence estimates and monetized benefits estimates.

In addition to the non-GHG ancillary health and environmental impacts that EPA quantified for analysis of the final Light-Duty Vehicle GHG standard, there are a number of other health and human welfare endpoints that EPA was unable to quantify because of current limitations in the methods or available data. For example, EPA has not quantified a number of known or suspected health effects linked with ozone and PM for which appropriate health impact functions are not available or which do not provide easily interpretable outcomes (e.g., changes in heart rate variability). In addition, EPA is currently unable to quantify a number of known welfare effects, including reduced acid and particulate deposition damage to cultural monuments and other materials, and environmental benefits due to reductions of impacts of eutrophication in coastal areas. For air toxics, the available tools and methods to assess risk from mobile sources at the national scale are not adequate for extrapolation to benefits assessment. In addition to inherent limitations in the tools for national-scale modeling of air toxics and exposure, there is a lack of epidemiology data for air toxics in the general population. All of the above-mentioned health impact omissions contribute to a likely underestimate of the total benefits attributable to the final rule.

Please refer to Chapter 7.3 of the RIA that accompanies the final rule for more information about the quantification and monetization of non-GHG-related benefits.

EPA notes IPI and EDF's recommendation for the interagency group to "give explicit direction to agencies on how to account for ancillary benefits associated with GHG reductions" (7246.1, pg 42). As noted in Section 4.5.4, the SCC TSD reiterates the need to document more thoroughly omitted impacts and monitor the literature for emerging research. As the research evolves, the Federal government, including EPA, is committed to exploring how modeling can be improved so that these aspects are better reflected in the SCC.

5.13.7. Energy Security Impacts

EPA Response to Comments

Organization: Fraas, Arthur, G.

Comment:

The joint DOT and EPA proposed CAFE standard represents an ambitious and challenging policy initiative that will reduce the oil consumption and the greenhouse gas emissions of light duty cars and trucks for the model years 2012 through 2016. At the same time, this rule will increase the initial purchase price of new vehicles and pose a substantial challenge to car and truck manufacturers in their efforts to comply with the proposed standards. As a result, the proposal raises a number of interesting analytical and policy questions. This comment will focus on one of these questions—the quantification of the energy security benefits of the proposed rule. [OAR-2009-0472-7523, p. 1]

Energy security benefits—typically including several disparate categories: national security benefits, macroeconomic disruption and adjustment benefits, and the benefits of exercising monopsony power to counter the exercise of market power by oil producing countries—have served as critical arguments in support of the rationale for government policies designed to secure greater energy independence for the United States. Over the last several decades, there has been a continuing debate about the nature and magnitude of each of these energy security benefit categories and the role that they ought to play in shaping U.S. energy policy. The DOT/EPA joint proposal discusses some of these issues and develops an estimate of energy security benefits as an integral part of the joint proposed CAFE rule. In particular, DOT and EPA would incorporate an estimate of the macroeconomic disruption/adjustment benefits as a part of the proposed rule's decision framework, while excluding from the CAFE calculation an estimate of the monopsony premium. [OAR-2009-0472-7523, pp. 1-2]

I support the DOT and EPA proposal to exclude the monopsony premium from the CAFE calculation although for a more general reason than that put forward by DOT and EPA—and will address the proposed macroeconomic disruption/adjustment benefits incorporated in the calculation of the standard in their CAFE proposal. [OAR-2009-0472-7523, p. 2]

The Monopsony Premium

DOT and EPA Proposed Approach—As a part of the CAFE NPRM, DOT and EPA have proposed to consider only the macroeconomic disruption/adjustment component in developing an estimate of energy security benefits associated with a reduction in the consumption of petroleum products. This departs from recent practice. In developing estimates of the energy security benefit of reducing petroleum consumption in past rules, DOT and EPA have also included an estimate of the "monopsony premium." The monopsony premium represents the avoided payments to oil producers in foreign countries associated with a decline in the world price of oil resulting from decreases in U.S. oil consumption. [OAR-2009-0472-7523, p. 2]

DOT and EPA propose to exclude the monopsony premium from the estimate of energy security benefits because this proposed rule adopts a global value for the social cost of carbon (SCC). DOT and EPA provide their rationale for excluding monopsony benefits as follows (74 FR 49622):

How should the energy security premium be used when some benefits from the proposed rule, such as the benefits of reducing greenhouse gas emissions, are calculated at a global level? Monopsony benefits represent avoided payments by the U.S. to oil producers in foreign countries that result from a decrease in the world price as the U.S. decreases its consumption of imported oil. Although there is clearly a benefit to the U .S. when considered from the domestic perspective, the decrease in price due to decreased demand in the U .S. also represents a loss of income to oil producing countries. Given the redistributive nature of this effect, do the negative effects on other countries "net out" the positive impacts to the U.S.? If this is the case, then, the monopsony portion of the energy security premium should be excluded from the net benefits calculation for the rule. [OAR-2009-0472-7523, p. 2]

However, DOT and EPA also offer an alternative rationale that would justify including the monopsony premium in the estimate of energy security benefits (74 FR 49623):
"...the global SCC is used in these calculations, not because the global net benefits of the rule are being computed (they are not), but rather because in the context of a global public good, the global marginal benefit is the correct domestic benefit against which domestic costs are to be compared. Similarly, energy security is inherently a domestic benefit. Thus, should the two benefits, if they are both viewed from this domestic perspective, be counted in the net benefits estimates for this rulemaking and more generally what are the overall implications of this approach to justifying regulation? If the monopsony benefits were included in this case, they could be significant. [OAR-2009-0472-7523, p. 3]

DOT and EPA have requested comment on their approach and on the alternative rationale presented above for including a monopsony premium in the benefits analysis. [OAR-2009-0472-7523, p. 3]

Comment on the Monopsony Premium — There is a more general—and I believe more compelling—rationale that justifies the decision not to consider the monopsony premium as a part of a benefit-cost analysis of regulatory action than that offered by DOT and EPA. The monopsony premium reflects a pecuniary externality—that is, an externality that operates through the effect of the regulatory action on prices--rather than a direct resource effect on a third party. There is a general consensus among economists that pecuniary externalities should not be considered in benefit-cost analyses of governmental actions. Economists point out that the pecuniary externality does not affect resource allocation, but government action to address the pecuniary externality will further distort resource use. In the specific case of energy security benefits, for example, Brown and Huntington, in their September 2009 paper titled "Estimating U .S. Oil Security Premiums," [See OAR-2009-0472-7523, pp. 7-38 for Brown and Huntington 2009 paper.] exclude the consideration of the monopsony premium "because it is not a security concern and because pursuing these gains would distort global resource use rather than offset an externality." Similarly, the October 2009 National Academy of Sciences (NAS) report on the Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use finds with respect to the monopsony premium "...that no externality in the sense considered in this report exists." (p. 235) As a result, the NAS report does not include the monopsony premium as a part of an estimate of the "unpriced consequences" of energy production and use. [OAR-2009-0472-7523, p. 3]

The existence of an externality is a crucial test because by addressing true externalities—sometimes identified as technical externalities—government regulation can improve the well-being of society. This is the context and purpose of a benefit-cost analysis. On the other hand, addressing a pecuniary externality only serves to affect the transfer of income without improving the allocation of resources and the production possibilities of the economy. [OAR-2009-0472-7523, p. 3]

There is a policy argument that because OPEC exercises market power to inflate the world oil price (by restricting oil production), it would be appropriate for the United States to exercise its monopsony power as a major consumer of oil to reclaim some of the oil revenues realized by oil producing countries. However, there are some countervailing reasons that support a decision to exclude the consideration of a monopsony premium. First, such a policy further distorts the use of oil resources because its effect, like that associated with the exercise of monopoly power, would be to reduce consumption below the optimal level. Second, the successful use of monopsony power depends on the response of OPEC, other oil producing countries, and oil consuming countries. The exercise of market power by the United States is designed purely to transfer income from oil producing countries to the United States. Any policy initiative taken for this purpose should carefully develop the rationale for the pursuit of such a "beggar thy neighbor" policy. In any event, even if the revenue transfers realized by exercising monopsony power are used to support a policy decision to restrict the consumption of oil through regulation, these transfers are unrelated to a standard externality and ought not be included as a part of the benefit-cost analysis of the rule. [OAR-2009-0472-7523, pp. 3-4]

Oil Disruption Costs

DOT and EPA Proposed Approach—With respect to disruption costs, DOT and EPA have adopted the updated estimates for the macroeconomic disruption/adjustment costs based on a March 2008 study titled "The Energy Security Benefits of Reduced Oil Use, 2006-2015." These estimates (in 2007 $) range from $6.70 per barrel ($3 .11- $10.67) in 2015 to $8.12 per barrel ($3.90 - $13.04) in 2030. [OAR-2009-0472-7523, p. 4]

Comment on Oil Disruption Costs—The September 2009 Brown and Huntington paper develops an alternative, lower estimate of the macroeconomic disruption/adjustment costs. Their estimate of the cost of displacing a barrel of domestic oil with a barrel of imported oil ranges from $2.17 per barrel in 2015 to $2 .37 per barrel in 2030 (in 2007 dollars). The differences in the estimates reported by EPA and Brown and Huntington appear to reside in differences in the approach used in estimating the change in U .S. oil prices resulting from an oil supply shock. The EPA estimate is based on a methodology that allocates a portion of the oil supply shock to the U.S. and then calculates the effect on oil prices using estimates of short-run demand and non-OPEC supply elasticity. Brown and Huntington use a world oil market model to develop effects of an oil supply shock on the world oil price and then use the resulting world oil price to estimate U.S. macroeconomic disruption costs. [OAR-2009-0472-7523, p. 4]

In addition, although the October 2009 NAS report on the hidden costs of energy recognizes that "...policies that lead to a reduction in oil consumption in the United States will most assuredly

reduce our vulnerability to future oil shocks, ...", it reaches the conclusion that oil disruption costs are not an externality. As a result, the NAS report recommends that further research is needed to better understand this possible externality and the report does not include a quantitative estimate of the energy disruption costs of imported oil in developing estimates of the unpriced externalities associated with energy infrastructure and security. (p. 236) [OAR-2009-0472-7523, p. 4]

In light of this advice, I believe that DOT and EPA need to sort out whether to include a macroeconomic disruption/adjustment cost component in their evaluation of the benefits and costs of the proposed CAFE rule. If DOT and EPA decide to retain some estimate of the disruption costs as an estimate of energy security benefits, the agencies need to justify the decision and develop a reasoned basis for the magnitude of their estimate taking into consideration the recent estimates provided by Brown and Huntington. [OAR-2009-0472-7523, p. 4-5] [See OAR-2009-0472-7523, pp. 7-38 for Brown and Huntington 2009 paper.]

EPA Response:

EPA appreciates that this commenter felt that that the magnitude of the economic disruption portion of the energy security benefit may be too high. This commenter cites a recent paper written by Stephen P.A. Brown and Hillard G. Huntington, entitled "Estimating U.S. Oil Security Premiums" (September 2009) as the basis for his comment. EPA reviewed this paper and found that it conducted a somewhat different analysis than the one conducted by ORNL in support of this rule. The Brown and Huntington paper focuses on policies and the energy security implications of increasing U.S. demand for oil (or at least holding U.S. oil consumption constant), while the ORNL analysis examines the energy security implications of decreasing U.S. oil consumption and oil imports. These asymmetrical analyses would be expected to yield somewhat different energy security results.

However, even given the different scenarios considered, the Brown and Huntington estimates are roughly similar to the ORNL estimates. For example, for an increase in U.S. consumption that leads to an increase in U.S. imports of oil, Brown and Huntington estimate a 2015 disruption premium of $4.87 per barrel, with an uncertainty range from $1.03 to $14.10 per barrel. The corresponding 2015 estimate for ORNL as the result of a reduction in U.S. oil imports is $6.70 per barrel, with an uncertainty range of $3.11 to $10.67 per barrel. Given that the two studies analyze different scenarios, since the Brown and Huntington disruption premiums are well within the uncertainty range of the ORNL study, and given that the ORNL scenario matches the specific oil market impacts anticipated from the rule while the Brown and Huntington paper does not, EPA has concluded that the ORNL disruption security premium estimates are more applicable for analyzing this final rule.

This commenter also felt that the monopsony effect should be excluded from net benefits calculations for the rule since it is a "pecuniary" externality or does not represent an efficiency gain. EPA disagrees that all pecuniary externalities should a priori be excluded from net benefits calculations. For example, in the case here, the oil market is non-competitive, and if the social decision-making unit of interest is the U.S., there is an argument for accounting for the

monopsony premium to assess the excess transfer of wealth caused by the exercise of cartel power outside of the U.S.
However, for the final rule, EPA continues to take a global perspective with respect to climate change by using the global SCC value. Therefore, the EPA did not count monopsony benefits since they "net out" with losses to other countries outside the U.S. Since EPA is taking a global perspective, EPA did not undertake a distributional analysis for this final rule, since the losses to the losers (oil producers that export oil to the U.S.) would equal the gains to the winners (U.S. consumers of imported oil). As a result, EPA continues to included only the macroeconomic disruption portion of the energy security benefits to monetize the total energy security benefits of this rule.

Organization: New York University School of Law, Institute for Policy Integrity (IPI)
Mr. Richter - Environmental Capital Partners

Comment:

Energy Security Effects

The agencies consider how the proposed regulations might generate three possible benefits to "energy security" by reducing U.S. consumption of petroleum: (1) lower oil prices worldwide as U.S. demand drops; (2) decreased risk to the U.S. economy from a sudden disruption in oil supplies; and (3) reduced costs for U.S. energy security policies. The first effect should be treated as a distributional consequence, not a standard efficiency benefit. The second effect should be valued as a benefit, so long as the agencies disaggregate any wealth transfers that occur during price shocks. The agencies were justified in not quantifying the last effect (i.e. treating it as having zero value), provided the agencies incorporate the increased protection value of the Strategic Petroleum Reserve into their calculation of disruption effects. [OAR-2009-0472-7232.3, p. 12]

Demand Effects

Often referred to as a "monopsony" effect, oil consumers in the United States do, in aggregate, exert enough influence on the worldwide demand for oil that a variation in U.S. demand will affect prices (although recent evidence suggests the effect might be limited). If the proposed regulations reduce U.S. demand, prices will drop, and U.S. consumers will experience some additional savings. [OAR-2009-0472-7232.3, p. 12]

But these perceived savings come at the expense of lost revenue to the oil suppliers. Globally, there are no net benefits from the demand effects. The agencies currently choose not to calculate any benefits from demand effects because they select a global value for the social cost of carbon, and they believe a consistently global perspective on costs and benefits may be required. [OAR-2009-0472-7232.3, p. 12]

However, the agencies seek comment on another possible approach:
"From one perspective, the global social cost of carbon is used in these calculation, not because the global net benefits of the rule are being computed (they are not), but rather because in the

context of a global public good [like climate change mitigation], the global marginal benefit is the correct domestic benefit against which domestic costs are to be compared. Similarly, energy security is inherently a domestic benefit. Thus, should the two benefits, if they are both viewed from this domestic perspective, be counted in the net benefits estimates for this rulemaking, and more generally what are the overall implications of this approach to justifying regulation?" [OAR-2009-0472-7232.3, p. 13]

The agencies repeatedly note that demand effects could be "significant." But the issue of how to include demand effects is not a choice between a global or a domestic perspective on costs and benefits. Rather, the agencies should address the demand effects through a distributional analysis. [OAR-2009-0472-7232.3, p. 13]

As the agencies note, wealth transfers are not typically included as a "benefit." OMB guidance provided in the Circular A4 confirms that cost-benefit analysis focuses on measuring the economic efficiency of a regulation, and wealth transfers do not offer any efficiency gains or losses. However, efficiency is not necessarily the only relevant policy consideration, and therefore such transfers and other distributional effects must be considered as part of a separate distributional analysis. [OAR-2009-0472-7232.3, p. 13]

The agencies should assess how demand effects might generate distributional gains for U.S. oil consumers at the expense of foreign (and domestic) oil producers. The agencies could consider how income, or other distributional weights, might factor into such an analysis. The agencies should also, pursuant to OMB recommendations and the principles of Executive Order 12866, incorporate such a study of demand effects into a broader distributional analysis. [OAR-2009-0472-7232.3, p. 13]

Note that—given the agencies' statutory mandates—there is nothing inconsistent about using a global social cost of carbon estimate and still giving some preference to policies that generate distributional gains for the United States at the expense of foreign companies or countries. [OAR-2009-0472-7232.3, p. 13]

Disruption Effects

The agencies calculate how reducing U.S. oil consumption will decrease the risk of lost economic output during a sudden, unanticipated disruption in oil imports and supplies. However, the Joint Technical Support Document suggests part of this calculation might include the higher price of imported oil caused by a supply disruption and price shock, which, as the agencies acknowledge, is a "wealth transfer." Such effects are no different analytically than the demand/monopsony effects considered above. Thus, any such import effects should be disaggregated from the disruption effects, and should instead be considered in the type of distributional analysis discussed above. [OAR-2009-0472-7232.3, p. 14]

Security Policy Effects

The two main security policy effects of reducing U.S. demand for oil are: a possible impact on

U.S. military activities in politically instable regions that supply oil; and a possible impact on the size or valuation of U.S. Strategic Petroleum Reserve. [OAR-2009-0472-7232.3, p. 14]

The agencies have chosen not to calculate any budgetary outlays for military expenses as a benefit because, given the size of likely oil import reductions and the broad range of policy objectives targeted by various U.S. military missions, economic analysis predicts military costs are unlikely to change as a result of the proposed regulations. Importantly, this case is distinct from the agencies' decision not to quantify other uncertain costs or benefits (particularly, lost consumer welfare), because zero is, according to the best economic analysis, a plausible estimate for this hard-to-quantify element. Therefore, fewer policy and legal risks are raised by the choice not to quantify. It is also commendable that NHTSA conducted a sensitivity analysis on potential military effects. [OAR-2009-0472-7232.3, p. 14]

By decreasing U.S. demand for oil, the proposed regulations could either decrease the need to maintain such a large Strategic Petroleum Reserve, or it could increase the protective value offered by the current Strategic Petroleum Reserve. The decision not to quantify any cost savings from maintaining a smaller Strategic Petroleum Reserve is justified so long as the agencies have incorporated the increased protective value from maintaining the current Strategic Petroleum Reserve into the calculation of disruption effects. [OAR-2009-0472-7232.3, p. 14]
Less obvious, but more really more important, is the connection to our strategic defense. I'm sure you've heard this argument, but the less gas we burn, of course, the less foreign oil we import, and it's estimated that we export the equivalent of the TARP bail-out, approximately $750 billion every year to import foreign carbon. That's money flowing out of our economy and primarily into countries that do not have our best interest in mind. The more we rely on other countries for strategic resources, the less stability that we have here at home, less foreign oil imported means more domestic security. [EPA-HQ-OAR-2009-0472-4621, p.160]

EPA Response:

EPA has addressed the monopsony issue in its response to the previous comment.

In the energy security literature, the macroeconomic disruption component of the energy security premium traditionally has included both (1) increased payments for petroleum imports associated with a rapid increase in world oil prices, and (2) the GDP losses and adjustment costs that result from projected future oil price shocks. This comment from the New York University School of Law suggested that the increased payments associated with rapid increases in petroleum prices (i.e., price increases in a disrupted market) represent transfers from U.S. oil consumers to petroleum suppliers rather than real economic costs, and therefore, should not be counted as a benefit.

The approach recommended by the commentor would represent a significant departure from how the macroeconomic disruption costs associated with oil price shocks have been quantified in the broader energy security literature, and the EPA believes it should be analyzed in more detail before being applied in a regulatory context. In addition, the EPA also believes that there are compelling reasons to treat higher oil import costs during oil supply disruptions differently than simple wealth transfers that reflect the exercise of market power by petroleum sellers or

consumers. According to the OMB definition of a transfer: "Benefit and cost estimates should reflect real resource use. Transfer payments are monetary payments from one group to another that do not affect total resources available to society…The net reduction in the total surplus (consumer plus producer) is a real cost to society, but the transfer from buyers to sellers resulting from a higher price is not a real cost since the net reduction automatically accounts for the transfer from buyers to sellers."[59] In other words, pure transfers do not lead to changes in the allocation or consumption of economic resources, whereas changes in the resource allocation or use produce real economic costs or benefits.

While price increases during oil price disruptions can result in large transfers of wealth, they also result in a combination of real resource shortages, costly short-run shifts in energy supply, behavioral and demand adjustments by energy users, and other response costs. Unlike pure transfers, the root cause of the disruption price increase is a real resource supply reduction due, for example, to disaster or war. Regions where supplies are disrupted (i.e., the U.S.) suffer very high costs. Businesses' and households' emergency responses to supply disruptions and rapid price increases are likely to consume some real economic resources, in addition to causing financial losses to the U.S. economy that are matched by offsetting gains elsewhere in the global economy.

While households and businesses can reduce their petroleum consumption, invest in fuel switching technologies, or use futures markets to insulate themselves in advance against the potential costs of rapid increases in oil prices, when deciding how extensively to do so, they are unlikely to account for the effect of their petroleum consumption on the magnitude of costs that supply interruptions and accompanying price shocks impose on others. As a consequence, the U.S. economy as a whole will not make sufficient use of these mechanisms to insulate itself from the real costs of rapid increases in energy prices and outlays that usually accompany oil supply interruptions.[60] Therefore, the ORNL estimate of macroeconomic disruption and adjustment costs that the EPA uses to value energy security benefits includes the increased oil import costs stemming from oil price shocks that are unanticipated and not internalized by advance actions of U.S. consumers of petroleum products. The EPA believes that, as the ORNL analysis argues, the uninternalized oil import costs that occur during oil supply interruptions represents a real cost associated with U.S. petroleum consumption and imports, and that reducing its value by lowering domestic petroleum consumption and imports thus represents a real economic benefit from lower fuel consumption.

EPA appreciates the comments on how to account for the potential military cost associated with maintaining a U.S. military presence to help secure stable oil supply from potentially vulnerable regions of the world. These comments indicated that EPA should not attempt to monetize U.S.

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[59] OMB Circular A-4, September 17, 2003. See http://www.whitehouse.gov/omb/assets/omb/circulars/a004/a-4.pdf

[60] For a more complete discussion of the reasons why the oil import cost component of the macroeconomic disruption and adjustment costs includes some real costs and does not represent a pure transfer, see Paul N. Leiby, *Estimating the Energy Security Benefits of Reduced U.S. Oil Imports: Final Report*, ORNL-TM-2007-028, Oak Ridge National Laboratory, March 14, 2008, pp. 21-25.

military costs nor include these costs in the energy security analysis. At this time, EPA agrees with these comments. In fact, a recent study conducted by the National Academy of Sciences (NAS)[61] notes that it is difficult to disentangle military spending to achieve political goals from spending to protect petroleum supply routes. Further, it notes that spending to protect petroleum supply routes would not likely change, given a moderate reduction in oil flowing from volatile regions to the U.S. However, the NAS study also suggests that a very large reduction in oil demand could affect military spending. The EPA has adopted the NAS position that a change in military spending is unlikely given a moderate reduction in oil demand, and continues to exclude a monetary estimate of military costs in our energy security calculations for this rule. However, EPA also believes that more examination of this issue may be warranted in the future.

Organization: Environmental Defense Fund.

Comment:

And, finally, there's this looming question about -- and this is discussed again in the preamble about one of the other factors that NHTSA has to consider about the need to conserve energy -- and I was interested that the preamble quotes from the June 30, 1977 Federal Register to the effect that the need to conserve energy encompasses, and this is a quote from the preamble, the consumer cost, national balance of payments, environmental and foreign policy implications of our needs for large quantities of petroleum, especially imported petroleum. And, by the way, this letter that I attached on the social cost of carbon talks about those factors in greater length, but then the preamble itself only mentions really three of those four factors, [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 125.] which are the impacts of our national debt on the world oil price, the risks of disruption and securing imported oil military expenses, which are obviously considerable for this country, but it doesn't mention the fourth, which is the impact of our oil consumption in the motor vehicle sector on our balance of payments, and I think we have to recognize, you know, a year and a half ago when our trade deficit was at $800 billion, our current account deficit was almost at $800 billion, oil accounted for almost half of it. Today, because of this recession that we're in, the latest figures are that our trade deficit has been halved, down to a mere $400 billion, but you multiply the amount of oil that we're now importing, which is down from where it was about a year and a half ago, but about 10 million gallons per day total, and a good portion of that is in the motor vehicle sector, we are spending [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 126.] 250 to 300 billion dollars on importing oil, which is, you know, two thirds or more of our current, you know, trade deficit, and there is beginning to be in the economic literature a lot of talk about the status of the dollar as a reserve currency, and, you know, the status of the dollar in the payments for oil. Oil is denominated in dollars. Well, the fact is that if that trade deficit and the amount of money that we're spending on imported oil continues, the likelihood that oil is going to continue to be denominated in dollars is going down, and that really has to be a factor. It's not a factor that the Energy Information Administration is probably going to take into account, but it does seem to me in the social cost of carbon something that you do need to take into account. If that happened, there could be radical changes

[61] *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*, NAS, ISBN - 10: 0-309-14636-4. February 2010.

in the price of oil. So I think, particularly from NHTSA's [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 127.] point of view in setting the standard, you really have to take into account the contribution of imported oil to our balance of payments and the implications of all that for the sustain ability of the value of the dollar, and, you know, given world trade organization rules, I don't see anyway in which this country can discriminate between imported oil and domestically produced oil, and, therefore, the only way to reduce the huge contribution that imported oil makes to our trade deficit and our current account deficit and what it's doing to our economy, which is awful, the only way to deal with it is to cut down very significantly in the use of oil in our transportation sector, and what you're doing is a step in the right direction, but I believe that this consideration would drive you to be just as aggressive as you possibly can. [These comments were submitted as testimony at the New York public hearing. See docket number EPA-HQ-OAR-2009-0472-4621, p. 128.]

EPA Response:

EPA's energy security analysis estimates the impacts of this rule on U.S. oil imports. Clearly, these estimated reductions in U.S. oil imports will have impacts on the U.S. trade balance and balance of payments with other countries through time. It is beyond the scope of this analysis to estimate how changes in the U.S.'s trade and balance of payments from this rule will influence the world financial system.

5.14. Statutory and Executive Order Reviews

Organization: Competitive Enterprise Institute
Institute for Liberty
National Asphalt Pavement Association
American Chemistry Council, American Iron and Steel Institute, American Meat Institute, Corn Refiners Association, National Oilseed Processors Association
Peabody Energy Company
American Petroleum Institute

Comment:

Competitive Enterprise Institute

III. The proposed standards will spawn an economically-chilling regulatory morass.

EPA Administrator Jackson certifies that the proposed rule "would not have a significant economic impact on a substantial number of small entities." In reality, EPA's proposed GHG standards will subject millions of previously unregulated small entities to the risk of new regulation, controls, paperwork, penalties, and litigation. Moreover, the endangerment finding on which the proposed rule is predicated will also expose the economy as a whole to the risk of unprecedentedly severe constraints under the NAAQS program. [OAR-2009-0472-7281.1, p.10]

Institute for Liberty

The disproportionate impact of federal environmental regulations on the small business sector led President Clinton to support the 1996 Small Business Regulatory Enforcement Fairness Act (SBREFA). Among other things, SBREFA amended the Regulatory Flexibility Act of 1980 to require a panel of government officials (made up of employees from the EPA, the U.S. Small Business Administration's (SBA) Office of Advocacy, and the Office of Management and Budget's Office of Information and Regulatory Affairs) and representatives of small entities to examine regulatory proposals and suggest less burdensome alternatives that would meet EPA's underlying environmental protection objectives while minimizing impact on small entities. These panels, entitled, "Small Business Advocacy Review Panels," issue a report that is published in conjunction with a proposed regulation. That way, the EPA benefits from sensitivity towards its impact on small business and the public benefits from a more transparent disclosure of benefits, costs, and potential alternatives.

Unfortunately, the EPA did not avail itself of the Small Business Advocacy Review Panel process prior to proposing this rule. This is unfortunate, especially since the U.S. Small Business Administration, Office of Advocacy, twice advised the EPA to convene the small business panel well before EPA issued its proposal.

We respectfully request that EPA to withdraw this rule. And, we further request that EPA convene a Small Business Advocacy Review panel under section 609 of the Regulatory Flexibility Act. These recommendations, if followed, will allow for EPA to develop alternatives that will minimize the impact on small business while reducing GHG emissions. Our recommendations come at a time when sensitivity towards small business not only makes sense; it is of vital importance for our country's economic recovery. [OAR-2009-0472-7284.1, p.4]

EPA's reliance on Section 609(c) of the RFA to avoid the required analysis is equally illogical. That section authorizes EPA to forgo the statutory requirement to —prepare and make available for public comment an initial regulatory flexibility analysis describing the rule's impact on small entities. 5 U.S.C. § 603(a). The RFA directs that this analysis —shall be published in the Federal Register at the time of the publication of general notice of proposed rulemaking for the rule. Thus, 609(c) does not exempt EPA from these clear mandates—rather, Section 609's small entity outreach —requirements apply *before* the EPA proposes a rule. *West Va. Chamber of Comm. v. Browner*, 166 F.3d 366, 1998 WL 827315, *3 (4th Cir. 1998). [OAR-2009-0472-7143.1, p.4]

National Asphalt Pavement Association

Our concern is in EPA's certification statement in the current proposal [74 Fed Reg 49629]: ' .... that this proposed rule will not have a significant economic impact on a substantial number of small entities. However, EPA recognizes that some small entities continue to be concerned about the potential impacts of the statutory imposition of PSD requirements that may occur given the various EPA rulemakings currently under consideration concerning greenhouse gas emissions . .... Concerns about the potential impacts of statutorily imposed PSD requirements on small entities will be the subject of deliberations in that consultation and outreach. Concerned small entities should direct any comments relating to potential adverse economic impacts on small

entities from PSD requirements for GHG emissions to the docket for the PSD tailoring rule.' [OAR-2009-0472-7224.1, pp.1-2]

It is critical that all potentially affected entities understand the impact of EPA regulating greenhouse gas emissions under the light-duty vehicle proposal. In contrast to EPA's suggestion recommending that stationary (industrial) sources address any concerns that they have through comments on the upcoming 'tailoring rule' -- once EPA regulates greenhouse gases from light-duty vehicles, these sources will already be subject to PSD as defined in the Clean Air Act. Bottom line: the greenhouse gas threshold values proposed are totally discordant with the current Clean Air Act. As representatives of a small industrial source sector, we implore EPA to correct and address this situation now. [OAR-2009-0472-7224.1, p.2]

For example, any state operating permit issued with greenhouse gas, i.e., carbon dioxide thresholds, higher than those identified within the current Clean Air Act, would be vulnerable to appeal and litigation. Certainly, EPA must fully evaluate the collateral impact this proposal would have on all other aspects of the Clean Air Act including, but not limited to, the impact on state and local air permitting authorities, businesses, industry and the economy in all areas of the country. [OAR-2009-0472-7224.1, p.2]

Once EPA 'regulates' greenhouse gas emissions from mobile sources, the Clean Air Act requires that stationary sources be regulated under the threshold requirements as specified within the Clean Air Act - regardless of any 'tailoring rule' EPA develops - as those thresholds are specified within federal law. [OAR-2009-0472-7224.1, p .2]

Not only are states and local permitting authorities wholly unprepared for the millions of entities that will be required to comply with the Clean Air Act once greenhouse gas standards are set by EPA on light-duty vehicles, but EPA has failed to carefully evaluate the number of sources that could be affected once the light-duty vehicle GHG proposal goes into effect. We think that EPA has grossly underestimated the number and types of facilities that will be impacted by the light-duty vehicle greenhouse gas proposal by becoming subject to NSR pollutants and the Title V and PSD requirements. [OAR-2009-0472-7224.1, p.2]

For example, asphalt plants, typically considered as a small industrial source, would now become subject to Title V and PSD permitting as soon as greenhouse gases are regulated under the light-duty vehicle greenhouse gas standards. There are over 4,000 of these asphalt plants across the country. The same can be said of large malls and hotels, for example. Any source that emits more than 250 tons of carbon dioxide would now be subject to these stringent permitting programs, thereby increasing costs associated with paperwork, testing, and more importantly, control or mitigation technologies. Additionally, moving forward with this action will further exacerbate the economic downturn in the road construction and other small industries - some already in dire economic straits, by creating more uncertainty and greater operational expenses. [OAR-2009-0472-7224.1, p.2]

Our industry takes compliance with the Clean Air Act seriously. If it is not the intention of EPA to regulate relatively minor sources of greenhouse gas emissions, then the statutory language of the Clean Air Act must be amended, or specific and clear legislative efforts must be provided to

the states where these small sources operate. Inevitably, litigation will ensue. Our members, builders of the nation's roads, do not want to respond to litigation when their operations, as small industrial sources, are in compliance with the intent of the Clean Air Act - but not in conformity with existing statutory language that lags behind agency regulation. [OAR-2009-0472-7224.1, p.3]

EPA must not move forward with regulating greenhouse gas emissions under the light-duty vehicle proposal until its impact on small and minor industrial sources of greenhouse gas emissions are taken into account. EPA has indicated it is not the intent of the Agency to regulate industrial sources of greenhouse gas emissions below 25,000 tons annually. In fact, finalization of this rule will do just the opposite - it will require small industrial sources to comply with Title V and PSD permitting requirements, and potentially face a spate of litigation. [OAR-2009-0472-7224.1, p.3]

American Chemistry Council, American Iron and Steel Institute, American Meat Institute, Corn Refiners Association, National Oilseed Processors Association

EPA's Failure to Analyze the PSD and Title V Effects of Finalizing the Motor Vehicle Rule Runs Contrary to Procedural Requirements

Failure to account for the PSD and Title V implications of proposed Motor Vehicle Rule also violates the Regulatory Flexibility Act and the Paperwork Reduction Act. [NHTSA-2009-0059-0094.1, p.6] [[See Docket Number NHTSA-2009-0059-0094.1, pp.6-8 for a detailed discussion on this issue.]]

The PRA and the RFA promote overriding public interests in transparency and ensuring that costs imposed by agency actions are fully considered. These are not mere boxes for the Agency to check perfunctorily. Entities affected by agency actions depend on these safeguards in order to be kept abreast of rules that will impact them, and to know how to provide meaningful input. By ignoring the obvious, admitted, and enormous implications that this proposed Rule poses for stationary sources, EPA thwarts those public interests. [NHTSA-2009-0059-0094.1, pp.7-8]

Peabody Energy Company

EPA failed to address the economic and regulatory effects of making major sources subject to PSD regulation for their GHG emissions under a number of Executive Orders and statutes

Despite the large economic and regulatory consequences that the motor vehicle rule will have on major stationary sources, EPA unaccountably failed to produce the necessary studies of these effects in conformance with the relevant Executive Orders and statutes. The motor vehicle rule docket contains an RIA and certain other regulatory reviews, but these analyses are all confined to the direct benefits and effects of motor vehicle GHG regulation and do not address the PSD effects that motor vehicle regulation will automatically trigger. [OAR-2009-0472-7223.1, pp.5-6]

EPA seems to have been of the view when it promulgated the motor vehicle rule that it would address the PSD effects of that rule when it undertook the tailoring rulemaking. EPA did, in fact, produce analyses in the tailoring rule docket of PSD impacts of regulating GHG emissions under the CAA but only for small sources, not major sources. Indeed, EPA's RIA and other Executive Order and statutory reviews in the tailoring rule docket were all premised on the notion that the tailoring rule reduces costs associated with PSD, on the theory that the tailoring rule defers PSD and Title V regulation of small sources that would otherwise occur absent the rule. [OAR-2009-0472-7223.1, p.6]

Peabody will comment on that premise in its tailoring rule comments, but for purposes here EPA completely missed the point that the tailoring rule did not reduce or otherwise affect PSD regulation of major source GHG emitters (other than to define the major source threshold). As a result, none of the Executive Order and statutory reviews in the tailoring rule or motor vehicle dockets addressed the effect on major sources of making GHGs regulated CAA air pollutants through promulgation of the motor vehicle rule. [OAR-2009-0472-7223.1,p.6]

That failure is plain legal error. By regulating motor vehicle GHG emissions, EPA is automatically initiating PSD regulation of major source GHG emissions. EPA therefore has a responsibility under the Executive Orders and statutes discussed below to examine the economic and regulatory impacts of that decision. [OAR-2009-0472-7223.1,p.6]

Moreover, EPA's error is so fundamental that it can only be cured by EPA producing the necessary studies as a part of a re-noticed proposed motor vehicle rule. Each of the Executive Order and statutory reviews discussed below is required to be prepared at the time of the notice of proposed rulemaking and is intended to inform the public comment process. Particularly given the potentially very large costs that the motor vehicle rule will impose on major stationary sources and the economy in general, the public is entitled to have the benefit of EPA's analysis of these costs when it files comments on the motor vehicle rule. [OAR-2009-0472-7223.1, p.6]

Finally, it would be no defense for EPA to respond that it cannot at this time precisely monetize the cost of GHG BACT for large sources. In the first place, EPA did not take this position in its motor vehicle proposal. EPA's reason for not assessing PSD impacts in the motor vehicle rulemaking docket was not because of its inability to estimate BACT costs; it was because EPA evidently did not think of it. Moreover, the Executive Orders and statutes discussed below do not require precise monetization, only estimation to the best of EPA's ability. For instance, under Section 3(d) of Executive Order 12291, agencies are required to describe potential benefits and costs of the rule and to determine potential net benefits, including any benefits, effects, and net benefits that "cannot be quantified in monetary terms." [OAR-2009-0472-7223.1, p.6]

1. Executive Order 12291 – Federal Regulation. Executive Order 12291 provides that an agency promulgating a "major rule" must prepare, at the time of the notice of proposed rulemaking, an RIA setting forth essentially a cost-benefit analysis of the rule. EPA agrees that the motor vehicle rule is a major rule and prepared an RIA setting forth the costs and benefits of the rule. That analysis, however, did not discuss the costs and benefits of the PSD regulation that would be triggered automatically by the rule. Among the purposes of the RIA requirement is to ensure that "[a]administrative decisions shall be based on adequate information concerning the need for and

consequences of proposed government action." Since one of the main consequences of regulating motor vehicle GHG emissions is PSD regulation of large source GHG emissions, EPA should have included those costs in its motor vehicle RIA. [OAR-2009-0472-7223.1, p.7]

2. Executive Order 12866 – Regulatory Planning and Review. Under Executive Order 12866, agencies are required to specify to the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget any actions that the agency believes are "significant regulatory actions." If the agency or OIRA concludes that an action is a "significant regulatory action," the agency is required to submit to OIRA the analysis set forth in Section 6(a)(3)(B). If the agency action is a "significant regulatory action" because it will "[h]ave an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities," the agency is required to submit the more detailed analysis under Section 6(a)(3)(C). EPA concluded that the motor vehicle rule is a significant regulatory action under Executive Order 12866 but the analysis was legally deficient because it did not examine PSD impacts on large sources. [OAR-2009-0472-7223.1, p.7]

3. Executive Order 13211 – Energy Effects. Executive Order 13211 requires that agencies produce a Statement of Energy Effects whenever they take a "significant energy action," defined as one that is a significant regulatory action under Executive Order 12866 and is "likely to have a significant adverse effect on the supply, distribution, or use of energy." The motor vehicle preamble says that a Statement of Energy Effects was not required because the rule will not adversely affect the supply, distribution or use of energy, and will in fact have a positive effect through improved automobile fuel economy. Again, however, this conclusion was reached without consideration of PSD effects on major sources. As set forth above, EPA states that, even with the tailoring rule limitations, almost all of the nation's electric generating and oil refining fleets will become subject to PSD regulation for their GHG emissions. It is inarguable that this regulation will impose costs and therefore potentially affect the supply, distribution or use of energy. At least EPA must examine the issue. [OAR-2009-0472-7223.1, p.7]

4. Unfunded Mandates Reform Act (UMRA). UMRA applies to any Federal mandate that may result in the expenditure by State, local and tribal governments, in the aggregate, or by the private sector of $100,000,000 or more. An agency proposing such a mandate must produce the analysis required by Section 202(a). [OAR-2009-0472-7223.1, p.8]

The motor vehicle preamble states that UMRA does not apply to the motor vehicle rule as to possible impacts to state, local or tribal governments but that it does apply as to impacts to the private sector. It states that impacts to the private sector are analyzed in its RIA, but as noted above, that RIA is deficient because it does not consider PSD impacts. [OAR-2009-0472-7223.1, p.8]

Additionally, EPA's conclusion that UMRA does not apply as to impacts on state governments is incorrect. For the reasons discussed above, the tailoring rule does not automatically prevent small sources from being subject to PSD regulation in "most states," that is, those that administer their own PSD programs subject to EPA approval. In order for small sources not to be subject to PSD regulation for their GHG emissions in those states, the states must amend their laws and

regulations setting forth the 100/250 tpy and zero significance levels. [OAR-2009-0472-7223.1, p.8]

As a result, under the tailoring rule standing alone, state permitting agencies will be overwhelmed with new PSD permit applications. Although states may change those laws, those that wish to do so will require some time to amend their PSD rules through rulemaking and/or legislation. Thus, notwithstanding the tailoring rule, making GHGs regulated air pollutants through adoption of the motor vehicle rule could have very large and immediate consequences for state governments in overwhelming their permit systems before they can make the necessary rule changes. These consequences must be examined under UMRA. [OAR-2009-0472-7223.1, p.8]

5. Executive Order 13132 – Federalism. Executive Order 131312 applies to "policies that have federalism implications," defined as regulations and other agency actions that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Agencies may not promulgate regulations that have federalism implications unless the federal government funds the States' costs or the agency consults with the States and provides, in the notice of proposed rulemaking, the statement set forth in Section 6(b)(2)(B). The motor vehicle rule preamble states that EPA does not have to provide this statement because the motor vehicle rule does not impose mandates on any States. However, for the reasons just discussed, the motor vehicle rule does impose significant PSD permit burdens on states. EPA therefore should have provided the relevant statement under Executive Order 13132. [OAR-2009-0472-7223.1, p.8]

6. CAA § 317. Section 317 provides that EPA must prepare an economic impact assessment before publishing a notice of proposed rulemaking in the federal register for certain specified types of rules. Under Section 317(a)(4), such a statement is required for "any regulation under part C of subchapter I of this chapter (relating to prevention of significant deterioration of air quality)." [OAR-2009-0472-7223.1, pp.8-9]

Because the motor vehicle rule makes GHGs subject to CAA regulation for the first time, and therefore triggers PSD regulation of GHGs for the first time, there is no question that the rule is both a Section 202(a) rule and a PSD rule under part C. Accordingly, EPA was required to but failed to produce the necessary economic impact assessment. [OAR-2009-0472-7223.1, p.9]

7. Regulatory Flexibility Act (RFA). The RFA generally requires that an agency prepare a regulatory flexibility analysis for any rulemaking unless it certifies that the rule will not have a significant economic impact on a substantial number of small entities. The motor vehicle preamble concluded that the rule would not cause such an impact because the rule was only targeted at large automakers. EPA, however, did not examine how many small entities within the meaning of the RFA are major sources of GHG emissions that would be subject to PSD regulation. Until that analysis is performed, EPA has no basis to conclude that it is not required to prepare a regulatory flexibility analysis. [OAR-2009-0472-7223.1, p.9]

EPA Response:

EPA Response to Comments

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities subject to the rule. If a covered agency, such as EPA, is unable to certify a rule at proposal, they must conduct a Small Business Advocacy Review (SBAR) panel.

If an agency certifies that the rule at issue does not have a significant impact on a substantial number of small entities (SISNOSE), the agency is not required to undertake any regulatory flexibility analyses or conduct a SBAR panel. When considering whether or not a rule should be certified at proposal stage, the RFA requires the agency to look only at the "small entities to which *the proposed rule* will apply" and small entities "subject to *the requirement*" of the specific rule in question. 5 U.S.C. § 603(b) (emphases added).[62] Though the agency must have a "factual basis" for this certification, that factual basis can be supported by the fact that the rule "does not directly regulate any small entities." *ATA v. EPA*, 175 F.3d 1027, 1045 (D.C. Cir. 1999).

Courts have "consistently rejected the contention that the RFA applies to small businesses indirectly affected by the regulation of other entities." *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 869 (D.C. Cir. 2001). The D.C. Circuit has previously addressed an RFA claim in the context of motor vehicle regulation, and held that EPA was not required to conduct RFA analyses where the rule did not directly impose requirements on small automobile manufacturers. *Motor & Equipment Mfrs. Ass'n v. Nichols (MEMA)*, 142 F.3d 449, 467 (D.C. Cir. 1998) (EPA is only "obliged to consider the impact of the rule on small automobile manufacturers subject to the rule").

This rule, as did the rule in *MEMA*, regulates exclusively large motor vehicle manufacturers and thus has no direct impacts on *any* small entities.[63] EPA recognizes that in some cases the Clean Air Act will require application of PSD permitting requirements to GHG emissions when the regulatory requirement to control those emissions "takes effect" under this rule. However, those permitting requirements are imposed by operation of section 165 of the Clean Air Act and are not imposed by the regulatory requirements contained in this separate regulatory action under section 202(a) (1). EPA is not required to base its certification decision on indirect impacts

[62] Likewise, in discussing the consideration of significant alternatives to the proposed rule in an initial regulatory flexibility analysis, the RFA refers to the "establishment of differing … requirements" that take into account the resources available to small entities, the simplification of "requirements under the rule for such small entities," and "an exemption from coverage of the rule … for such small entities."

[63] Small manufacturers are exempted from the GHG standards and other regulatory requirements adopted in this final rule. For the proposal, a limited number of small entities were subject to a proposed reporting requirement, but the economic impact of that proposed regulatory requirement was clearly not significant. EPA proposed to exempt small manufacturers and other entities from the GHG standards and other regulatory requirements, and the only proposed regulatory requirement they were subject to was a one-time reporting obligation to obtain such exemption. This single regulatory requirement did not have a significant economic impact. For the proposal, EPA was not required to consider the indirect impacts on these small entities of other requirements that were not contained in the proposed rule, but instead flow from the operation of other provisions of the CAA. EPA properly based its NOSISNOSE certification for the proposal on the lack of significant impact imposed by the regulations themselves on small entities subject to the proposed rule. For the final rule, EPA is not adopting this proposed one-time reporting requirement, as it is not needed.

imposed on parties that are not subject to the regulatory requirements of this rule, such as parties that are not motor vehicle manufacturers. EPA properly bases its certification by considering the impacts of the regulatory requirements contained in the proposed and final rule, determining whether these regulatory requirements themselves imposed a significant impact on a substantial number of small entities subject to the rule.

As this rulemaking is limited to issues involved in setting emissions standards for large motor vehicle manufacturers, EPA would not be able to account for any potential indirect impacts from separate statutory requirements on entities not directly subject to or impacted by this rule. Even where a rule could "doubtless have economic impacts in many sectors of the economy," courts have refused to "convert every rulemaking process into a massive exercise in economic modeling" by requiring a full RFA analysis. *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 869 (D.C. Cir. 2001).

Although the RFA does not apply to this action, EPA recognized that some small entities were concerned about the potential indirect impacts of the statutory imposition of PSD requirements that may occur given the various EPA rulemakings concerning greenhouse gas emissions. In the interest of providing small entities a forum to express their concerns in addition to the opportunity provided in the notice and comment process, EPA used the discretion afforded to it under section 609(c) of the RFA to consult with OMB and SBA, with input from outreach to small entities, regarding the potential impacts of PSD regulatory requirements on small entities that might occur as EPA considers regulations of GHGs.

Section 609(c) of the RFA allows agencies to, in their discretion, apply the provisions of the RFA that address SBAR panels to a rule that "the agency intends to certify… but the agency believes *may* have a greater than de minimis impact on a substantial number of small entities." 5 U.S.C. § 609(c) (emphasis added).[64] EPA does not believe that the use of this discretion requires a rigid application of the entirety of section 609(c). Instead, agencies may pick and choose elements of the SBAR panel process to apply as they deem appropriate for the rule at issue.

EPA believes that section 609(c) of the RFA authorizes agencies to engage in outreach similar to that of a formal SBAR panel where, as in this action, the RFA would not otherwise apply due to the certification of the rule.[65] EPA maintains that this action does not have *any* significant impacts on small entities directly subject to the rule, and EPA's use of 609(c) does not indicate otherwise. As indicated by the word "may," an agency has discretion to invoke this provision in a variety of circumstance and is not limited to those situations where it is certain that a rule has a greater than de minimis impact.

[64] One commenter misunderstood this provision, believing that Section 609(c) only authorizes agencies to forgo an Initial Regulatory Flexibility Analysis (IRFA). This is not an accurate reading of the statute. Section 609(c) applies where agencies certify that a rule will have no SISNOSE under 605(c). When an agency certifies no SISNOSE under 605(c), they are not obligated to conduct an IRFA. Since the 609(b) SBAR panel requirements are triggered only when EPA is "required to conduct" an IRFA, Section 609(c) discretion applies only to the SBAR panel process provisions of 609(b), but not the substantive IFRA requirement. The 4th Cir. opinion referenced by the commenter does not involve agency use of section 609(c) and has no meaningful bearing on the matter at hand.

[65] EPA does *not* believe that section 609(c) of the RFA offers agencies a chance to circumvent the panel process where they do not intend to certify that the rule does not have a SISNOSE, and EPA remains committed to holding SBAR panels where contemplated by the RFA.

Commenters have cited almost no case law to support their claim that EPA has violated the RFA.[66] One case, *Aero. Repair Station Ass'n v. F.A.A.*, 494 F.3d 161 (D.C. Cir. 2007), is plainly distinguishable from this action. In *Aero. Repair*, the FAA certified a regulation that imposed requirements on "employer air carriers", but which also "expressly require[d] that the employees of contractors and subcontractors be tested" under the regulation. *Id.* at 177. FAA argued that since the phrase "employer air carriers" did not include contractors and subcontractors, they were not required to consider impacts on contractors and subcontractors in fulfilling their RFA obligations. The court rejected the claim, finding that "the *2006 Final Rule* imposes responsibilities directly on the contractors and subcontractors." *Id.* (emphasis added).[67]

In this action, the only entities that have responsibilities under this rule are motor vehicle manufacturers, and the rule explicitly exempts small motor vehicle manufacturers from those responsibilities. No other entities, whether implicitly or explicitly, have *any* responsibilities under this rule. EPA will not enforce this rule against anyone other than the large automobile manufacturers subject to it.

Accordingly, EPA maintains that it has fully complied with the requirements of the Regulatory Flexibility Act in this action. Because this rule does not significantly impact a substantial number of small entities that are subject to the rule, EPA has statutory authority to certify this rule under the RFA. Thus, EPA was not required to conduct a SBAR panel or any regulatory flexibility analyses.

EPA rejects the argument that it needs to provide additional analyses beyond that in the Regulatory Impact Analysis, to be responsive to various Executive Orders on analyses of the costs and benefits of this rule. These Executive Orders call for EPA to analyze the impacts of this rule and its requirements, not indirect impacts of statutory requirements that flow from this rule. Likewise, compliance with UMRA and Executive Order 13132 are properly focused don the impacts of this rule on States, not the impacts of indirect effects that flow from this rule. Finally, EPA believes that its RIA satisfies the requirements of Section 317 of the Act, which calls for an analysis of the impacts of the requirements imposed by this rule, not indirect effects that flow from it.

The various comments on consideration of the economic impacts of the PSD permitting provisions fail to recognize that any analysis of such impacts would not aid EPA in determining what GHG standards to adopt in this rulemaking. They are not related to any of the issues EPA needs to consider and decide in determining the content of the GHG standards that will apply to automobile manufacturers. EPA has addressed elsewhere the separate issue of whether EPA should delay issuance of this rule because of concerns raised over PSD permitting.

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[66] EPA is not aware of a prior situation where EPA voluntarily conducted a SBAR panel where the regulatory action at hand triggered a subsequent statutory obligation, and commenters have not indicated otherwise. Although EPA is aware of a handful of examples of other agencies voluntarily engaging in regulatory flexibility analyses where their regulatory action arguably triggered a statutory obligation, we note that none of those agencies conducted a SBAR panel prior to proposal. In addition, any analyses they completed were post proposal. *See e.g.* 71 Fed. Reg. 8,265 (Feb. 16, 2006).

[67] It is also worth noting that the FAA is not a covered agency under the RFA, and thus is not required to complete an SBAR panel.

5.15. Comments on EPA Regulatory Text

Organization: Chrysler Group LLC (Chrysler)
Alliance of Automobile Manufacturers (Alliance)
New York State Department of Environmental Conservation

Comment:

Chrysler Group LLC (Chrysler):

Clarity of Intent

The intent of the proposed regulatory text is unclear in several cases and additional clarity is required. The following comments are provided. [NHTSA-2009-0059-0124, p.39] [[See NHTSA-2009-0059-0124, pp.39-41 for detailed comments regarding the regulatory text]]

Definitions

The following concerns were noted with the definitions given in the proposed regulatory text. [[See NHTSA-2009-0059-0124, p.42 for detailed comments regarding the definitions in the proposed regulatory text]]

Reference to Appropriate Greenhouse Gas Metric

Throughout the proposed regulatory text, a variety of greenhouse gas metrics are referred to (CO2, CO2-equivalent, and CREE). The intermingling of terms can cause confusion, especially in cases where it is unclear whether actual CO2 emissions are meant or whether a metric which includes CO2 emissions is meant. Chrysler recommends that the proposed regulatory text only use the exact term meant in each instance. [NHTSA-2009-0059-0124, p.42]

The following instances were identified where the apparent intended metric was CREE, but an alternative greenhouse gas metric was specified. [[See NHTSA-2009-0059-0124, p.42 for detailed comments regarding the regulatory text]]

Reference Issues

Some references within the regulatory text appear to be incorrect. [[See NHTSA-2009-0059-0124, p.43 for detailed comments regarding the regulatory text]]

Regulatory Text Changes Are Indicated, but Could Not Be Identified

In several instances, the NPRM indicated that modifications had been made to regulatory text from previously existing language, but Chrysler could not identify the difference between the original and proposed text. [NHTSA-2009-0059-0124, p.43]

EPA Response to Comments

86.1803-01 Round, Rounded, or Rounding: Comment 11 notes that the definition is revised, but no difference could be identified.

86.1841-0 1 (b): Comment 21 notes that paragraph (b) is revised, but no difference could be identified. [NHTSA-2009-0059-0124, p.43]

Alliance of Automobile Manufacturers (Alliance):

Net Heating Value (NHV) Determinations (Proposed regulations in 40 C.F.R. 600.113-08 and 600.510-12)

In the proposed 40 C.F.R. 600.113-08(f)(4)(iii) and again in 40 C.F.R. 600.510(g)(1)(ii)(A), EPA proposed to use the ASTM D 240-92 test method for determining the NHV for ethanol and alcohol fuels. [OAR-2009-0472-6952.1, p.53]

The current practice for determining NHV for gasoline is ASTM D 3338-92 which has superior precision as compared to that of ASTM D-240. ASTM D 3338 has repeatability and reproducibility of 9 Btu/lb and 20 Btu/lb respectively, whereas ASTM D-240 has repeatability and reproducibility of 56 Btu/lb and 172 Btu/lb respectively. The two methods are not equivalent and if the new procedure (ASTM D-240) is adopted, a bias in fuel properties can be assumed. [OAR-2009-0472-6952.1, p.53]

Recommendation:

The current ASTM D3338 process for determining the Net Heating Value (NHV) should be retained for fuels with ethanol blends that are ≤10%. For fuels that have a greater than 10% ethanol composition, EPA should work with industry on an acceptable method for determining NHV, possibly with a modified ASTM D 3338 calculation and a sample for distillation of the gasoline portion of the fuel. [OAR-2009-0472-6952.1, p.53]

New York State Department of Environmental Conservation

Apparent Internal Citation Errors (Federal Register Notice pages 49759-49762)
The proposed language for §86.1848-10(c)(9). includes reference to §86.1865-12(k)(7) for the procedure to be used to determine the vehicles deemed to have been sold in violation of the fleet average C02 standards, in the event a manufacturer does violate those standards. This procedure is found in §86.1865-12(k)(8). Similarly there are other references to paragraph §86.1865-12(k)(7) in §86.1865-12(j) and (k) that appear to more properly refer to §86.1865-12(k)(8). [OAR-2009-0472-7454, p.4]

Carbon Related Exhaust Emissions Formula (Proposed Amendments to Section 600.113-08)
EPA includes the CO2 formed from hydrocarbons and CO as C02 regulated by this standard. We concur with this approach. However the proposed Carbon Related Exhaust Emission equations in 600.113-08(h) reduce hydrocarbons to carbon rather than carbon dioxide. [OAR-2009-0472-7454, p.5]

The formula for calculating carbon related exhaust emissions (CREE) contain an error in the hydrocarbon term. The equation follows: [OAR-2009-0472-7454, p.5]

CREE = CWF(HC) + 1.571(CO) + (CO2) [OAR-2009-0472-7454, p.5]

The purpose of the 1.571 factor for carbon monoxide is to convert the mass of CO to the mass of an equivalent number of moles of C02. However, the hydrocarbon term is multiplied by the carbon weight fraction, which converts to the mass of an equivalent number of moles of carbon. Another representation of the proposed equation is: [OAR-2009-0472-7454, p.5]

CREE = CWF(HC) +(44/28)(CO) + (44/44) (CO2) [OAR-2009-0472-7454, p.5]

To properly express CREE on a consistent basis as CO2, the equation should be: [OAR-2009-0472-7454, p.5]

CREE = CWF (44/12) (HC) + (44/28) (CO) + (44/44) (CO2) [OAR-2009-0472-7454, p.5]

Or:

CREE = 3.667(CWF)(HC) + 1.571(CO) + (C02) [OAR-2009-0472-7454, p.5]

There appear to be similar errors in the hydrocarbon terms for other, non-gasoline, fuels. [OAR-2009-0472-7454, p.5]

EPA Response:

Comments will be addressed below on the following topics: ASTM Test Procedure to Determine the Net Heating Value for Methanol and Ethanol; and Regulatory Text Clarifications.

ASTM Test Procedure to Determine the Net Heating Value for Methanol and Ethanol: EPA proposed revisions to paragraphs §600.113-08(f)(2)(iii), §600.113-08(f)(4)(iii) and §600.510(g)(1)(ii)(A), regarding the net heating value (NHV) used for methanol and ethanol fuels. The proposed regulation changes required manufacturers to use ASTM D 240-92 test method to determine the NHV for ethanol and methanol fuels.

Comments submitted by the Alliance indicated that that "The current practice for determining NHV for gasoline is ASTM D 3338-92 which has superior precision as compared to that of ASTM D-240. ASTM D 3338 has repeatability and reproducibility of 9 Btu/lb and 20 Btu/lb respectively, whereas ASTM D-240 has repeatability and reproducibility of 56 Btu/lb and 172 Btu/lb respectively. The two methods are not equivalent and if the new procedure (ASTM D-240) is adopted, a bias in fuel properties can be assumed." The Alliance recommended that "The current ASTM D3338 process for determining the Net Heating Value (NHV) should be retained for fuels with ethanol blends that are ≤10%. For fuels that have a greater than 10% ethanol composition, EPA should work with industry on an acceptable method for determining NHV, possibly with a modified ASTM D 3338 calculation and a sample for distillation of the gasoline portion of the fuel."

EPA Response to Comments

EPA agrees with the Alliance comments and has corrected the regulations in the final rule accordingly. The reference to ASTM D 240-92 is not needed in paragraphs §600.113-08(f)(2)(iii) and (f)(4)(iii) and does not appear in the final rule (because NHV is not used in the fuel economy equation for vehicles operated on ethanol or methanol fuels). Paragraph §600.510(g)(1)(ii)(A) reads in the final rule as follows:

> **"(ii)(A) The net heating value for alcohol fuels shall be premeasured using a test method which has been approved in advance by the Administrator."**

EPA intends to work with the Industry to help develop an appropriate test procedure to determine the NHV of alcohol fuels.

Regulatory Text Clarifications: Chrysler and the New York Department of Environmental Conservation submitted a list of paragraphs in the proposed regulations which Chrysler believes to be ambiguous, to contain typographical mistakes, or to contain incorrect regulatory references. EPA has made appropriate corrections in response. In addition, Chrysler commented that "Throughout the proposed regulatory text, a variety of greenhouse gas metrics are referred to (CO2, CO2-equivalent, and CREE). The intermingling of terms can cause confusion, especially in cases where it is unclear whether actual CO2 emissions are meant or whether a metric which includes CO2 emissions is meant. Chrysler recommends that the proposed regulatory text only use the exact term meant in each instance."

EPA appreciates the comments about the errata in the regulations, and the final rule has corrected the regulations, accordingly. The final rule also contains a number of minor amendments to update the regulations as needed and to ensure that the regulations are consistent with changes discussed in the preamble to the final rule. Regarding Chrysler's comment about the intermingling of CO2 and CREE terms, the final rule revised most of the CO2 emission references to carbon-related exhaust emissions (CREE) references, where appropriate. The GHG emission standards still refer to a CO2 standard (although CREE emissions are measured and compared to the CO2 standard) because a CO2 standard is easier for the general public to understand. To prevent confusion about this concept, the final rule revised the CREE definition contained in §600.002-08, to read as follows:

> **§600.002-08 Definitions.**
>
> *Carbon-related exhaust emissions (CREE)* means the summation of the carbon-containing constituents of the exhaust emissions, with each constituent adjusted by a coefficient representing the carbon weight fraction of each constituent, as specified in §600.113-08. For example, carbon-related exhaust emissions (weighted 55 percent city and 45 percent highway) are used to demonstrate compliance with fleet average CO_2 emission standards outlined in §86.1818(c).

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7. Other Comments

7.1. Stationary Source and Permitting Issues

Organization: Air Permitting Forum
Alliance of Automobile Manufacturers (Alliance)
American Chemistry Council (ACC)
American Farm Bureau Federation (AFBA)
American Forest and Paper Association (AF&PA)
American Iron and Steel Institute
American Meat Institute
American Petroleum Institute
Arizona Public Service
BCCA Appeal Group (the Group)
Brick Industry Association
California Cotton Ginners Association (CCGA)
Charleston Metro Chamber of Commerce
Consumers Energy
Corn Refiners Association
Council of Industrial Boiler Owners (CIBO)
County of Greenville, SC
Dow Chemical Company (Dow)
Duke Energy
Edison Electric Institute
Energy-Intensive Manufacturers Working Group
Fertilizer Institute
Georgia Department of Natural Resources
Georgia-Pacific (GP)
Industry Coalition
Mass Comment Campaign (48 comments) (unknown organization)
Mississippi Department of Environmental quality
National Association of Home Builders (NAHB)
National Association of Manufacturers
National Climate Coalition
National Cotton Ginners Association
National Mining Association (NMA)
National Oilseed Processors Association
National Petrochemical & Refiners Association
NISEI Farmers League
Peabody Energy Company
SCANA Corporation
Sierra Research Inc.
South Carolina Chamber of Commerce
South Carolina Department of Health and Environmental Control
South Carolina Manufacturers Alliance (SCMA)
South Carolina Pulp & Paper Association (SCPPA)

Southeastern States Air Resources Managers, Inc. (SESARM)
Spurgeon, C. M.
Stanton, Neil
Texas Chemical Council (TCC)
Texas Cotton Ginners Association
Texas Department of Agriculture
Texas Industry Project (TIP)
Texas Oil and Gas Association
Utility Air Regulatory Group
Western Agricultural Processors Association
Wood, John

Comment:

Air Permitting Forum

The Air Permitting Forum believes that comprehensive climate legislation is far preferable to using the existing Clean Air Act case-by-case permitting programs to address GHG emissions. These permitting programs are resource-intensive for both regulated entities and regulators. Moreover, in an arena in which efficiency is the key to reducing impacts, the case by-case nature of the PSD and Title V programs indicates that they are perhaps the least efficient mechanisms to mitigate the effects of climate change. In sum: [OAR-2009-0472-7253.1, p.1]

[See Docket Number OAR-2009-0472-7253.1, pp.1-2 for detailed comments on the introduction]

EPA's Assumption that the Section 202 Rule Will Automatically Trigger PSD Permitting for Sources Solely Based on Their Emissions of Greenhouse Gases Is Incorrect
The common wisdom is that the Clean Air Act and the PSD regulations require EPA to subject to PSD review any source that is major and any modification of a major source above significance levels for any pollutant. The only exception this conventional wisdom allows is for nonattainment pollutants. [OAR-2009-0472-7253.1, p.2]

[See Docket OAR-2009-0472-7253.1, pp.2-5 for detailed comments pertaining to: Background, Relevant Statutory and Regulatory Applicability Provisions, Sections 161 and 165(a) Limit PSD Applicability Based on the Location of the Source and Case Law Confirms This Limitation, and EPA Can Implement the Proper Scope of PSD Applicability Under the Existing Regulations]

EPA Has Not Properly Accounted for the Costs of This Regulatory Action
As discussed above, the Clean Air Act and the PSD regulations are structured such that PSD should only impose BACT for GHGs on sources that are otherwise required to obtain a PSD permit based on their emissions of a NAAQS pollutant. To the extent that EPA continues in its view that PSD will be triggered and sources will be classified as

major for PSD solely on the basis of GHG emissions, the Agency must properly analyze those impacts in this rulemaking. [OAR-2009-0472-7253.1, p.5] EPA has acknowledged in the Proposed Tailoring Rule that, under its interpretation of the PSD applicability provisions, some 40,000 sources would be subject to PSD (an estimate that we believe is low). [OAR-2009-0472-7253.1, p.6]

[See Docket OAR-2009-0472-7253.1, pp.5-7 for detailed comments pertaining to: If EPA Does Not Adopt the Proper Interpretation of the PSD Program's Scope, It Must Include the Costs of Triggering PSD in Its Section 202 Rulemaking Analysis and Regardless of the Interpretation of the PSD Provisions, EPA Must Include the Costs of Triggering Title V Permitting for Stationary Sources in Its Section 202 Rulemaking Analysis]

Alliance of Automobile Manufacturers (Alliance)

Concerns with EPA's Position on Implications for Stationary Source Programs Under the Clean Air Act

EPA has stated in the NPRM that the issuance of regulations under Section 202 of the Clean Air Act will trigger application of the Prevention of Significant Deterioration (PSD) program of the CAA for stationary sources. 74 Fed. Reg. 49,629. EPA has reiterated this interpretation of CAA Section 165 in its proposal regarding reconsideration of the so-called Johnson Memo (74 Fed. Reg. 51,535, October 7, 2009) and in its proposal on the so-called Tailoring Rule for PSD (74 Fed. Reg. 55,292, October 27, 2009). [OAR-2009-0472-6952.1, p.68]

None of the three Federal Register notices cited above contain a thorough discussion of EPA's legal and policy options with regard to Section 165, nor have they addressed the regulatory impact of automatically and immediately triggering PSD on the sources that would be directly affected. Instead, EPA has focused narrowly on the "benefits" of "tailoring" the threshold emissions amount to 25,000 tons for PSD and Title V permitting. [OAR-2009-0472-6952.1, p.69]

The Alliance does not request, and would not support, delaying the final mobile source rule in order to address concerns regarding the implications for stationary sources. Having said that, the Alliance also believes that the implications of the mobile source rule for stationary sources have not been adequately addressed by the Agency, and need further analysis. [OAR-2009-0472-6952.1, p.69]

The Alliance urges EPA to deal with this issue within the confines of the Johnson Memo and PSD Tailoring rules, as is the Agency's apparent intent. The Alliance urges EPA to consider ways to avoid the automatic application of the PSD program to stationary sources. Moreover, to the extent that EPA concludes the application of PSD for GHGs is inevitable upon issuance of Section 202 regulations, the Agency should more thoroughly analyze the impacts of the PSD program in the context of the Johnson Memo and PSD Rulemakings. The Alliance does not believe that the Clean Air Act compels EPA to automatically and immediately trigger PSD as a result of the mobile source rule. Further

discussion of the legal and policy issues will be provided in Alliance comments on those later proposals. [OAR-2009-0472-6952.1, p.69]

American Chemistry Council (ACC)

EPA Must Assess and Address the Motor Vehicle Rule's Impacts on Stationary Sources Before Finalizing the Rule.
EPA's failure to account for the Title V and PSD consequences of finalizing the Motor Vehicle Rule would render the final Rule both arbitrary and capricious, and also invalid based on other procedural requirements for rulemaking. [OAR-2009-0472-7148.1, p.2]

The Associations acknowledge EPA's desire to address GHG emissions from mobile sources quickly, as well as NHTSA's need to set new fuel economy standards, which must be promulgated at least 18 months before the affected model year (in this case the 2012 model year). 49 U.S.C. § 32902(g)(2). However, as proposed, the Motor Vehicle Rule ignores the enormous burdens the Rule would impose on stationary sources. This omission violates legal requirements for agency rulemaking, constitutes arbitrary and capricious action, and is simply bad policy. This is especially so because nearly all the environmental benefits EPA says will result from its promulgation of the Motor Vehicle Rule under CAA authority would also result from the NHTSA rule alone. Yet, unlike NHTSA action to raise corporate average fuel economy (CAFE) standards, the redundant EPA standards promulgated under the CAA would have regulatory impacts reaching far beyond the automotive industry and would impose billions of dollars in additional permitting and compliance costs. [OAR-2009-0472-7148.1, p.2]

Thus, although the Associations take no position on NHTSA's proposal to increase CAFE standards, we vigorously object to EPA's proposal to finalize the superfluous Motor Vehicle Rule under CAA Section 202. EPA's failure to account here for the PSD and Title V burdens it elsewhere acknowledges will flow from this rulemaking renders this rulemaking legally invalid. EPA must fully consider those burdens in this rulemaking. [OAR-2009-0472-7148.1, p.2]

[See Docket number OAR-2009-0472-7148.1, cover page 1-2 for detailed comments]

[See Docket OAR-2009-0472-7148.1, pp. 2-8 for detailed comments pertaining to: EPA's failure to Analyze the PSD and Title V Effects of Finalizing the Motor Vehicle Rule Is Arbitrary and Capricious and EPA's Failure to Analyze the PSD and Title V Effects of Finalizing the Motor Vehicle Rule Runs Contrary to Procedural Requirements]

PSD Permitting Requirements Need Not and Should Not Apply to Stationary Sources' GHG Emissions Solely by Virtue of EPA Finalizing the Motor Vehicle Rule
EPA could properly decline to consider the PSD impacts of the proposed Motor Vehicle Rule in this rulemaking docket only if those impacts would not, in fact, result from the Rule. EPA has stated that PSD requirements will be triggered when the proposed Motor Vehicle Rule first subjects GHG emissions from cars to control—that is, model year 2012. See PSD Interpretive Memo Reconsideration, 74 Fed. Reg. at 51545–46. But EPA

can interpret the statute and regulations to avoid that result and eliminate the need to analyze the proposed Motor Vehicle Rule's effect on stationary sources in this proceeding. Moreover, by doing so, EPA would eliminate the need for the legally questionable GHG Tailoring Rule. [OAR-2009-0472-7148.1, p.8]

[See Docket OAR-2009-0472-7148.1, pp. 8-12 for detailed comments pertaining to: EPA's View that Issuance of the Motor Vehicle Rule Automatically Triggers PSD Based Solely on Emissions of GHGs Is Inconsistent with the Plain Meaning of the CAA and EPA's Regulations and The Phrase 'Pollutants Subject to Regulation' Is Also Most Reasonably Interpreted to Exclude GHGs]

EPA Should Exercise its Discretion to Defer Finalizing a Motor Vehicle Rule
EPA has clear legal authority to defer promulgation of an emission standard under CAA Section 202, even if the Agency proceeds in the near future to finalize a positive endangerment finding under CAA Section 202. It would be arbitrary and capricious for EPA not to exercise that authority because the potential economic consequences of the Motor Vehicle Rule are massive, and unquestionably outweigh any environmental benefits that would flow from EPA placing its imprimatur on the NHTSA rule. [OAR-2009-0472-7148.1, p.12]

[See Docket OAR-2009-0472-7148.1, pp. 12-14 for detailed comments pertaining to: Nothing Compels EPA to Finalize GHG Emissions Standards for Mobile Sources, Nothing Compels EPA to Finalize GHG Emissions Standards for Mobile Sources, There Are Numerous Compelling Reasons to Defer the Motor Vehicle Rule, and EPA Should Not Proceed Under CAA Section 202 Until the Agency Considers Acting Under CAA Section 115]

American Chemistry Council, American Iron and Steel Institute, American Meat Institute, Corn Refiners Association, National Oilseed Processors Association

The Associations and their members represent a sizeable and diverse collection of commercial interests. The Motor Vehicle Rule would have a substantial and direct effect on the Associations' members. The Motor Vehicle Rule, if finalized, would purport to subject greenhouse gases ("GHGs") to regulation under the Clean Air Act (CAA) for the first time. As a result, under EPA's current interpretation of its regulations, the Rule would trigger Title V and Prevention of Significant Deterioration (PSD) permitting and emission-control requirements for millions of stationary sources owned and operated by the Associations' members. These Title V and PSD requirements would impose unprecedented costs and burdens on the Associations' members, EPA, and state regulatory authorities. [NHTSA-2009-0059-0094.1, p.1]

The Associations acknowledge EPA's desire to address GHG emissions from mobile sources quickly, as well as NHTSA's need to set new fuel economy standards, which must be promulgated at least 18 months before the affected model year (in this case the 2012 model year). 49 U.S.C. § 32902(g)(2). However, as proposed, the Motor Vehicle Rule ignores the enormous burdens the Rule would impose on stationary sources. This

omission violates legal requirements for agency rulemaking, constitutes arbitrary and capricious action, and is simply bad policy. This is especially so because nearly all the environmental benefits EPA says will result from its promulgation of the Motor Vehicle Rule under CAA authority would also result from the NHTSA rule alone. Yet, unlike NHTSA action to raise corporate average fuel economy (CAFE) standards, the redundant EPA standards promulgated under the CAA would have regulatory impacts reaching far beyond the automotive industry and would impose billions of dollars in additional permitting and compliance costs. [NHTSA-2009-0059-0094.1, pp.1-2]

Thus, although the Associations take no position on NHTSA's proposal to increase CAFE standards, we vigorously object to EPA's proposal to finalize the superfluous Motor Vehicle Rule under CAA Section 202. EPA's failure to account here for the PSD and Title V burdens it elsewhere acknowledges will flow from this rulemaking renders this rulemaking legally invalid. EPA must fully consider those burdens in this rulemaking. [NHTSA-2009-0059-0094.1, p.2]

Alternatively, EPA could defer finalizing the proposed Motor Vehicle Rule at this time. EPA has ample authority and discretion to do so. And if EPA deferred, NHTSA still could finalize its regulations, yielding nearly all the emissions reductions that EPA seeks through the Motor Vehicle Rule, and none of the adverse PSD consequences. Moreover, deferring action on this rulemaking would permit EPA to fully consider the burdens associated with regulating GHGs under the CAA. EPA obviously has not performed or considered this analysis, and instead has improperly deflected comments on these consequences to the proposed GHG Tailoring Rule, which is inadequate to the task. EPA would abuse its discretion and act arbitrarily if it rushes to finalize the Motor Vehicle Rule before conducting the proper analysis. [NHTSA-2009-0059-0094.1, p.2]

There are, however, several ways in which the unprecedented PSD implications of the Motor Vehicle Rule could be avoided. First, EPA could interpret its PSD authority to ensure that only pollutants for which a National Ambient Air Quality Standard (NAAQS) has been set trigger PSD permitting requirements. This interpretation is faithful to the plain text of the CAA and EPA regulations, as well as Congress' original vision for the PSD program. Moreover, this interpretation would allow EPA to finalize a rule under CAA Section 202(a) that sets standards for GHG emissions from mobile sources without triggering unprecedented, costly, and burdensome regulatory consequences for stationary sources. [NHTSA-2009-0059-0094.1, p.2]

EPA Must Assess and Address the Motor Vehicle Rule's Impacts on Stationary Sources Before Finalizing the Rule.

EPA's failure to account for the Title V and PSD consequences of finalizing the Motor Vehicle Rule would render the final Rule both arbitrary and capricious, and also invalid based on other procedural requirements for rulemaking. [NHTSA-2009-0059-0094.1, p.2]

EPA Response to Comments

1. If finalized, the Motor Vehicle Rule would run afoul of the fundamental prohibition against "arbitrary and capricious" agency action. The Supreme Court has explained that "an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (emphasis added). [NHTSA-2009-0059-0094.1, pp.2-3] [[See Docket Number NHTSA-2009-0059-0094.1, pp.3-4 for more discussion on this issue.]]

2. EPA apparently seeks to justify its failure to consider the PSD and Title V consequences of the proposed Motor Vehicle Rule by directing comments on these consequences to the proposed GHG Tailoring Rule docket. It is improper for EPA to ignore these comments because they relate directly to and flow directly from the proposed Motor Vehicle Rule. [[See Docket Number NHTSA-2009-0059-0094.1, pp.4-6 for a detailed discussion on this issue.]]

Because EPA contends that PSD and Title V requirements for stationary sources will result from this rulemaking, it would arbitrary and capricious for EPA to finalize the Motor Vehicle Rule without considering that consequence. For the reasons stated above, EPA cannot avoid that result by pointing to the GHG Tailoring rulemaking. [NHTSA-2009-0059-0094.1, p.6]

In sum, EPA has no choice but to consider the impacts of the proposed Motor Vehicle Rule in this rulemaking. [NHTSA-2009-0059-0094.1, p.8]

PSD Permitting Requirements Need Not and Should Not Apply to Stationary Sources' GHG Emissions Solely by Virtue of EPA Finalizing the Motor Vehicle Rule

EPA could properly decline to consider the PSD impacts of the proposed Motor Vehicle Rule in this rulemaking docket only if those impacts would not, in fact, result from the Rule. EPA has stated that PSD requirements will be triggered when the proposed Motor Vehicle Rule first subjects GHG emissions from cars to control—that is, model year 2012. See PSD Interpretive Memo Reconsideration, 74 Fed. Reg. at 51545–46. But EPA can interpret the statute and regulations to avoid that result and eliminate the need to analyze the proposed Motor Vehicle Rule's effect on stationary sources in this proceeding. Moreover, by doing so, EPA would eliminate the need for the legally questionable GHG Tailoring Rule. [NHTSA-2009-0059-0094.1, p.8]

The immense burdens associated with PSD permitting that the Agency states would follow from issuance of the proposed Motor Vehicle Rule is not mandated by the Clean Air Act or the PSD regulations but rather is the result of EPA's interpretations of the statute and regulations. EPA's textual analysis, however, skips a crucial step, which is whether the PSD program is actually applicable under the plain language of the statute and regulations to sources that are major only by virtue of GHG emissions or to increases

in GHG emissions when a criteria pollutant is not otherwise experiencing a significant increase. [NHTSA-2009-0059-0094.1, p.8] [[See Docket Number NHTSA-2009-0059-0094.1, pp.8-10 for a detailed discussion on this issue.]]

The Phrase "Pollutants Subject to Regulation" Is Also Most Reasonably Interpreted to Exclude GHGs

If EPA does not interpret the statutory provisions regarding applicability as discussed in II.A, above, EPA should recognize the unique nature of carbon dioxide (CO2) and that Congress did not intend such a pollutant to trigger PSD. The endangerment finding under CAA Title II is distinctly different from the air quality purposes of the PSD program. Specifically, carbon dioxide emissions from motor vehicles are required to be regulated under Title II where, in the Administrator's judgment, such emissions "may reasonably be anticipated to endanger public health or welfare." See 42 U.S.C. 7511(a)(1) (emphasis added). To the extent anthropogenic carbon dioxide emissions may reasonably be viewed as presenting an "endangerment" to "public health or welfare" within the meaning of Title II, it does not follow that EPA is thereby authorized, much less compelled, to regulate CO2 emissions from stationary sources under the CAA's PSD program. [NHTSA-2009-0059-0094.1, p.10] [[See Docket Number NHTSA-2009-0059-0094.1, pp.10-12 for a detailed discussion on this issue.]]

American Farm Bureau Federation (AFBF)

At What Point Will The Economic Impacts on Small Businesses be Described ? [OAR-2009-0472-7171.1, p.3]
As indicated in our comments and the comments of others to the ANPR, the application of these programs will have significant and serious adverse economic impacts on farmers, ranchers, and small businesses as well as schools, hospitals and churches. For example, an endangerment finding automatically subjects stationary sources (buildings, facilities, structures) that have the potential to emit more than 250 tons of GHGs per year to costly and burdensome permits under the PSD program. The PSD permits require the applicant to comply with best available control technology as a condition for obtaining the permit. Title V requires entities that emit, or have the potential to emit, 100 tons per year of a regulated pollutant to also obtain a permit for such emissions. [OAR-2009-0472-7171.1, p.4]

EPA has failed to perform the required economic impact assessment under section 317 of the Clean Air Act. The assessment must be conducted prior to the Tailpipe Rule becoming final. [OAR-2009-0472-7171.1, p.4]

[See Docket Number OAR-2009-0472-7171.1, pp.3-11 for detailed comments pertaining to: The Proposed EPA 'Tailoring rule' does not change the economic implications of regulating GHGs under the Clean Air Act, Title V Permit Requirements Lead to Fees on Livestock, Application of Requirements for Prevention of Significant Deterioration (PSD) Permits Will Cause Adverse Economic Impacts to Agriculture, and Regulation of Greenhouse Gases Under the Clean Air Act Allows Little or No Flexibility]

The de minimis amount of methane emitted from light duty motor vehicles does not sufficiently "cause or contribute" to the endangerment of public health and welfare to warrant regulation under section 202(a) of the Clean Air Act. [OAR-2009-0472-7171.1, p.11]
Seeking to join the six different greenhouse gases together as a single "air pollutant" raises a series of questions and issues. As the agency illustrates, not only must these substances be found to "endanger the public health or welfare" but their emission from the sources sought to be regulated must "cause or contribute" to the air pollution which endangers the public health or welfare. Both of these requirements must be satisfied in order to regulate the substance. [OAR-2009-0472-7171.1, p.12]

[See Docket Number OAR-2009-0472-7171.1, pp.11-14 for detailed comments pertaining to: The de minimis amount of methane emitted from light duty motor vehicles does not sufficiently "cause or contribute" to the endangerment of public health and welfare to warrant regulation under section 202(a) of the Clean Air Act.]

Section 424 of the FY 2010 Interior-Environment Appropriations Act Prohibits the Promulgation of the Tailpipe Rule and the Tailoring Rule during FY 2010. [OAR-2009-0472-7171.1, p.14]
As indicated above, once the Tailpipe Rule has been enacted, a number of Clean Air Act programs and requirements are automatically triggered, including permit requirements under Title V. Title V is a self-executing program such that once a pollutant is regulated under any provision of the Clean Air Act (such as the Tailpipe Rule for GHG), no further rulemaking is required to make covered entities liable to obtain operating permits required by Title V. [OAR-2009-0472-7171.1, p.14]

[See Docket Number OAR-2009-0472-7171.1, pp.14-15 for detailed comments pertaining to: Section 424 of the FY 2010 Interior-Environment Appropriations Act Prohibits the Promulgation of the Tailpipe Rule and the Tailoring Rule during FY 2010]

GHG Regulation May Lead to Promulgation of National Ambient Air Quality Standards
The Clean Air Act and the subsequent judicial interpretations placed upon it, describes the procedure required by the Administrator once she makes an endangerment determination. [OAR-2009-0472-7171.1, p.15]

[See Docket Number OAR-2009-0472-7171.1, pp.14-15 for detailed comments pertaining to: GHG Regulation May Lead to Promulgation of National Ambient Air Quality Standards and the pertinent language in Section 108 of the Clean Air Act]

American Forest and Paper Association (AF&PA)

EPA Must Complete Sufficient Regulatory Impact Analyses Before Promulgating Tailpipe Emission Standards
The preceding discussion showed how using Clean Air Act authorities to impose GHG emission standards on motor vehicles would impose huge burdens on businesses and on regulatory authorities, not only directly, but also because imposition of GHG emission

limits on new motor vehicles would, pursuant to the CAA and EPA regulations, mean that tens of thousands of additional new and modified stationary sources would be subject to pre-construction PSD permitting requirements, as well as requiring Title V operating permits for the first time for millions of sources. In addition to just the cost and delay those sources would incur to apply for such permits, the massive increase in affected sources would overwhelm permitting authorities and result in permitting "gridlock," dramatically slowing economic development and innovation. [OAR-2009-0472-7126.1, p.3]

[See Docket Number OAR-2009-0472-7126.1, pp.3-4 for detailed comments]

EPA Should Defer GHG Emission Standards for Motor Vehicles
For the reasons described above, EPA should not promulgate motor vehicle emissions standards for GHGs at this time. The proposed endangerment and cause-or-contribute findings that are a prerequisite for such standards raised many issues of first impression that have not yet been adequately addressed by EPA. Congress is in the midst of actively considering comprehensive legislation addressing climate change and GHGs, which is much more appropriate than trying to force GHG regulation through Clean Air Act programs that were designed to address entirely different types of air pollution issues. And the imposition of tailpipe emission standards for GHGs will trigger massive stationary source permitting burdens for businesses and regulatory authorities, burdens that EPA has failed to assess and address as required by law. [OAR-2009-0472-7126.1, p.4]

[See Docket Number OAR-2009-0472-7126.1, pp.4-5 for detailed comments]

American Petroleum Institute

However, and even though the direct emissions reductions and fuel economy costs and benefits of the proposed EPA action and the proposed NHTSA fuel economy standards are nearly identical, the proposal entirely ignores the fact that the EPA regulations, if finalized, would have dramatically broader and more costly effects than the NHTSA rule. Unlike NHTSA action to raise corporate average fuel economy (CAFE) standards, new EPA standards promulgated under the Clean Air Act (CAA) would have regulatory impacts reaching far beyond the automotive industry and would trigger EPA regulation of GHG emissions from millions of sources never previously subject to regulation of GHG emissions, including millions of sources not previously subject to any CAA regulation at all.

Thus, while API has only very focused objections to NHTSA increasing CAFE standards in the manner proposed, see Part IV infra, API strongly objects to EPA finalizing its proposed rule under CAA section 202 authority. API urges EPA to assess and address the dramatically adverse impacts of its proposal under CAA section 202 before finalizing its rule. EPA must assess and appropriately minimize these impacts, within this rulemaking if EPA is to promulgate section 202(a) standards that are not flawed as a matter of law.

EPA Response to Comments

First, EPA must acknowledge that only pollutants for which a National Ambient Air Quality Standard (NAAQS) has been set trigger Prevention of Significant Deterioration (PSD) permitting requirements.

Second and alternatively, EPA has the full authority and discretion to defer finalizing CAA section 202(a) standards at this time. [OAR-2009-0472-7143.1, p.2]

EPA Cannot Finalize the 202 Rule Before Evaluating and Addressing Its Impacts on Stationary Sources. [OAR-2009-0472-7143.1, p.2]

EPA's Proposed Rule Unlawfully Fails to Analyze Its Effects. [OAR-2009-0472-7143.1, p.3]

EPA May Not Shunt Comments Regarding the Effects of its Proposed Car Rule to the Proposed Tailoring Rule. [OAR-2009-0472-7143.1, p.4]

EPA's View that Issuance of the Proposed Car Rule Automatically Triggers PSD Based Solely on Emissions of GHGs Is Inconsistent with the Plain Meaning of the CAA and EPA's Regulations. [OAR-2009-0472-7143.1, p.5]

EPA Should Exercise its Discretion to Defer Promulgation of a Section 202 Rule: EPA has clear legal authority to defer action on this rule, and should do so because the potential economic consequences of the rule are unprecedented and the environmental benefits of adding its imprimatur to the NHTSA rule are nearly nonexistent.

a. EPA Is Not Compelled to Act at This Time, and Should Exercise Its Discretion to Defer Finalizing New GHG Emissions Standards for Mobile Sources.

b. There Are Numerous Compelling Reasons to Defer the Section 202 Rule

Adding EPA's imprimatur to nearly identical NHTSA fuel economy standards will not achieve any marginal environmental benefit. NHTSA standards without this duplicative reliance on the CAA will not trigger PSD results that EPA has labeled "absurd, "impossible," and "contrary to expressed congressional intent." The fact that the timing of the 202 Rule is discretionary means that EPA's proposed PSD Tailoring Rule cannot be justified under the "absurd results" doctrine, and if the PSD Tailoring Rule is rejected the full range of "absurd" and "impossible" results will then flow from promulgation of the 202 rule. Further considerations also support this conclusion: Ongoing congressional and international deliberations may impact the validity of, or perceived necessity for, the proposed rule. [OAR-2009-0472-7143.1, p.9]

These are only the topic headings, for details please refer to the docket [OAR-2009-0472-7143.1]

Arizona Public Service (APS)

APS has significant concerns regarding the proposed Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. Specifically, a comparison of the proposed benefits resulting from the EPA program to the NHTSA program reveals the programs to be virtually identical and that EPA's proposal provides no apparent additional benefit. For this reason, APS believes that EPA's action is simply a means to regulate greenhouse gas emissions from stationary sources through the Clean Air Act Prevention of Significant Deterioration (PSD) and Title V permit programs. As such, APS also believes the economic and environmental cost and benefits analysis of this joint proposal fails to assess impacts on stationary sources. [OAR-2009-0472-7107.1, p.1]

If this rule is finalized, a significant number of stationary sources will become subject to PSD and Tide V permitting requirements. However, EPA did not include the economic and environmental consequences of triggering these rules. It is APS' position that EPA either withdraw its portion of the rule or perform a thorough economic and environmental cost and benefit analysis, and provide an adequate public notice and comment period to address the impacts to stationary sources. [OAR-2009-0472-7107.1, p.1]

BCCA Appeal Group (the Group)

More importantly, Congress is moving forward quickly on comprehensive legislation that would address the problem of climate change outside of the structure of the current Act. Despite a clear need to proceed with the utmost caution in this important area, EPA has proposed to regulate GHG emissions from motor vehicles in the Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards (the "Motor Vehicle GHG Rule"). Under EPA's current interpretation of the CAA, the Motor Vehicle GHG Rule may (as EPA has stated in the Proposed PSD and Title V GHG Tailoring Rule (the "PSD Tailoring Rule")3) trigger regulation of GHG emissions from millions of stationary sources, including hundreds of thousands of Texas sources, many of which have never before been regulated under the Clean Air Act ("CAA"). [OAR-2009-0472-7505.1, pp. 1-2]

The Motor Vehicle GHG Rule, as well as its companion, the PSD Tailoring Rule, are fundamentally flawed, both procedurally and substantively, and Texas, as the nation's leading energy producer and a leader in chemical manufacturing and agriculture, could be significantly impacted by these federal rulemakings. Most notably, EPA completely failed to evaluate the burdens of triggering PSD and Title V for GHG emissions under the required federal regulatory review statutes and Executive Orders. Furthermore, even had the Agency conducted the required burden analysis, the rule is unlawful, would devastate the Texas and national economies, and the burdens of regulating GHGs under CAA Section 202 far outweigh the insignificant environmental benefits of the GHG emission standards. [OAR-2009-0472-7505.1, p. 2]

Accordingly, for all of the reasons discussed in these comments, EPA should withdraw the Motor Vehicle GHG Rule, and proceed with caution going forward by allowing both

the international community and Congress time to develop a comprehensive and sensible approach to the global problem of climate change. [OAR-2009-0472-7505.1, p. 2]

[See OAR-2009-0472-7505.1, pp. 2-11 for comments related to PSD and NRS for stationary sources in Texas. These comments include the following topics: A. The Motor Vehicle GHG Rule Will Disproportionately Harm Texas, B. EPA Utterly Failed to Account for these Devastating Impacts to Texas and the Entire U.S. in its Burden Analysis of the Motor Vehicle GHG Rule, C. A Full Analysis of Actual Impacts on Sectors Beyond Autos Would Demonstrate That the Rule Cannot be Justified—the Burdens Associated with the Motor Vehicle GHG Rule Would Devastate the Texas Economy, D. EPA Should Adopt a More Reasonable Interpretation of the Clean Air Act Under which the Final Motor Vehicle GHG Rule Would Not Trigger PSD For Stationary Sources, and E. Nothing Compels EPA to Action under Section 202 at this Time—the Rule Provides Little or No Benefit and Produces Overwhelming Burdens.]

Brick Industry Association

The Brick Industry Association (BIA) is providing these comments because we are, directly affected by this rulemaking, even though none of our members will be directly subject to the requirements promulgated as a result of this process. As this rulemaking has the potential to impact virtually every manufacturer (and many consumers) in the country by its precedent setting regulation of greenhouse gases, this rulemaking directly impacts all of us. The brick industry provides one of the leading wall cladding materials for both commercial and residential construction throughout the country. There are approximately seventy brick manufacturing companies in the United States, with well over sixty of these companies being considered 'small businesses.' [OAR-2009-0472-11279, p.1]

In developing the Light Duty rule, and assessing the impacts on small businesses, the EPA completely ignored the tens of thousands of facilities that would be impacted by the fact that greenhouse gases would become a regulated pollutant at some point after this rule goes into effect (we are aware that EPA is still evaluating which specific 'triggering action' will make this happen). By deliberately ignoring the broader impact of this rulemaking process, the EPA was able to certify that there was not a significant impact on a substantial number of small entities 'pursuant to the Regulatory Flexibility Act (5 U .S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996).' The EPA is disingenuous at best. [OAR-2009-0472-11279, p.1]

Clearly, publishing the 'GHG Tailoring Rule' for the New Source Review Program under Part 50 of the Clean Air Act (published October 27, 2009, 74FR55291) represents significant effort on the EPA's part to mitigate the known impacts of the light Duty rulemaking. That proposal was also certified as having no significant impact on a substantial, number of small entities because it results in a net reduction of burden to industry over the burden that would exist if no 'Tailoring Rule' were promulgated. This clearly demonstrates that EPA understands that an impact occurred, based on their

actions, that impacts industry. We assert that they also should recognize that this impacted industry includes a substantial number of small entities. For our industry, even if the Tailoring Rule is published, the Light Duty Rule means that well over half of our industry will be thrust into the complex, and expensive, New Source Review process for the very first time. Some of our industry will also be pushed back into Title V, even though they will only be major sources for GHG. [OAR-2009-0472-11279, pp.1-2]

The EPA cannot reasonably assert that the Light Duty Rule has no significant impact on a substantial number of small entities in one rule, when less than one month later, it publishes another rule that attempts, but falls short, of mitigating those impacts. [OAR-2009-0472-11279, p.2]

California Cotton Ginners Association (CCGA)

EPA should review the economic benefit of this rule, considering all costs; both of those currently in the docket, and those outlined in the proposed Tailoring Rule. In addition, EPA should clearly evaluate the benefit of regulations solely based on CAFE standards. Finally EPA should consider extending the comment period in this docket, considering the significant additional costs discussed in the Tailoring Rule Proposal. [OAR-2009-0472-7139.1, p.2]

[See Docket Number OAR-2009-0472-7139.1, pp.1-2 for detailed comments]

Charleston Metro Chamber of Commerce

Our Chamber's Environmental Committee has studied the proposed rule and have major concerns primarily relating to the triggering of other provisions of the Clean Air Act (specifically Title V permitting and New Source Review permitting). We do not believe that EPA has adequately evaluated those consequences or options for minimizing and avoiding other collateral impacts. Our interpretation is that this rulemaking will trigger other provisions of the Clean Air Act (specifically Tile V permitting and New Source Review (NSR) permitting). [OAR-2009-0472-7061.1, p.1]

Unlike NHTSA, EPA is under no statutory deadline to promulgate the standards that it is now considering. It has the time and the obligation to analyze more fully its regulatory proposal and the wide-ranging impacts that it anticipates will likely be incurred after its finalization. Finally, EPA has failed even to consider possible ways in which it might avoid prematurely imposing significant regulatory burdens, like PSD and Title V requirements, on stationary sources while pursuing mobile source regulation under section 202(a). These are matters of the utmost significance, and EPA cannot simply ignore them consistent with its obligations under the CAA. For all of the foregoing reasons, Consumers Energy agrees with UARG and requests that EPA withdraw its portion of the Joint Motor Vehicle Proposal, that NHTSA revise its regulations as may be appropriate to address this change, and that EPA engage in a new, more thoroughly reasoned regulatory decision-making process while providing adequate public notice and opportunity for comment on these important issues. [OAR-2009-0472-7264.1, p.2]

Specifically, EPA has failed to carefully evaluate the number of sources that could be affected once the Light-Duty Vehicle GHG Standards go into effect. We feel that EPA has grossly underestimated the number and types of facilities that will be impacted by the light-duty vehicle GHG proposal by becoming subject to NSR pollutants and the Title V and NSR permitting requirements. The South Carolina Department of Health and Environmental Control (SCDHEC) has identified over 800 of the currently permitted small sources that would become subject to Tile V and NSR permitting as soon as GHGs are regulated under Light-duty Vehicle GHG standards. In comparison, South Carolina currently has 281 Title V permitted facilities.

[See Docket Number OAR-2009-0472-7061.1, pp.1-2 for detailed comments]

Consumers Energy

Consumers Energy is a member of the Utility Air Regulatory Group (UARG). We endorse the comments filed by UARG in this docket and incorporate them by reference. While we will not reiterate those detailed legal and technical comments, our comments will highlight several of the issues raised by UARG. [OAR-2009-0472-7264.1, p.1]

1. It is not clear that PSD and Title V permitting requirements would be triggered by the proposed rule.
2. EPA has not established that its proposal is capable of averting any endangerment caused by GHG emissions. Therefore, EPA is not authorized to issue proposed standards under Section 202(a) of the CAA. [OAR-2009-0472-7264.1, p.1]
3. EPA has misinterpreted the legal standard for finding endangerment.
4. EPA's proposed regulations would be largely duplicative of NHTSA's proposed program, adding essentially nothing. The effects of the joint program are too small to attack any climate-related endangerment fruitfully.
5. The environmental and economic impacts analysis underlying the joint motor vehicle proposal suffers from significant weaknesses and must be revised.
6. EPA Has Time To Take These Issues Into Consideration and Is Obligated To Do So. [OAR-2009-0472-7264.1, p.2]

Although the Agency acknowledges the speculative and unquantifiable nature of the matters it has attempted to assess, it fails entirely to address what may be the single most significant issue associated with its proposed standards -- the potential application of the PSD and Title V permitting programs to GHGs emitted by stationary sources. EPA's attempt to address these issues in other rulemakings cannot satisfy its obligations to provide adequate public notice and opportunity for comment on the impacts of the Joint Motor Vehicle Proposal, and indeed, examination of EPA's analysis in the PSD Reconsideration Rule and the Proposed Tailoring Rule demonstrates that issues relevant to this rulemaking will not be analyzed in those proceedings either. [OAR-2009-0472-7264.1, p.2]

Council of Industrial Boiler Owners (CIBO)

Although GHGs are not currently 'subject to regulation' under the CAA, once EPA finalizes the LDV rule to regulate GHG emissions under CAA Section 202, strong legal arguments can be made that other CAA regulatory requirements will be triggered, affecting stationary source CAA compliance. Due to the strong possibility that EPA could be legally compelled to regulate GHG emissions from stationary sources as a result of this regulation, it is unreasonable and arbitrary for EPA not to analyze impacts on stationary sources that could be required to limit their GHG emissions under a reasonable reading of the CAA. EPA has failed to conduct a proper regulatory impact analysis. CIBO takes the position overall that the CAA is an inappropriate vehicle for regulating GHG emissions and any effort to reduce GHG emissions from stationary sources is appropriately left to the federal legislature in the context of comprehensive, nationwide and economy-wide climate legislation. [OAR-2009-0472-7271.3, p.2]

ACCORDING TO EPA'S OWN LEGAL ANALYSIS, GHGS ARE NOT CURRENTLY POLLUTANTS 'SUBJECT TO REGULATION' UNDER THE CAA
As EPA explains in its recently proposed rule reconsidering the December 18, 2008 'PSD Interpretive Memo,' and supported by historic Agency practice and decisions of EPA officials, GHGs are not pollutants that are now 'subject to regulation' under the CAA. EPA [OAR-2009-0472-7271.3, p.2] has long held that for a pollutant to be 'subject to regulation' there must be actual control measures and not only monitoring or reporting requirements. [OAR-2009-0472-7271.3, p.3]

[See docket OAR-2009-0472-7271.3, pp.2-3 for detailed comments pertaining to: According to EPA's Own Legal Analysis, GHGs are not Currently Pollutants 'Subject to Regulation' Under the CAA]

IF GHGs ARE REGULATED UNDER SECTION 202 OF THE CAA, IT IS LIKELY THAT OTHER REGULATORY REQUIREMENTS WILL BE TRIGGERED
In other pending rulemakings, EPA has clearly stated its view that EPA's proposed LDV Rule, if finalized as proposed, will trigger other unrelated CAA regulatory requirements. Specifically, under EPA's interpretation of the CAA, regulation of GHGs under Section 202 will trigger requirements under the Prevention of Significant Deterioration (PSD) program. EPA acknowledged this in its October 27, 2009 proposed rule, Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Proposed Rule) (Tailoring Rule). In the opening paragraphs of the Tailoring Rule, EPA notes that once GHGs are regulated [OAR-2009-0472-7271.3, p.3] under Section 202(a), PSD permitting requirements will immediately apply to stationary sources emitting GHGs above the significance threshold. [OAR-2009-0472-7271.3, p.4]

[See docket OAR-2009-0472-7271.3, pp.3-4 for detailed comments pertaining to: If GHGs are Regulated Under Section 202 of the CAA, It is Likely That Other Regulatory Requirements Will Be Triggered]

EPA HAS FAILED TO CONDUCT AN ADEQUATE ANALYSIS OF THE IMPACTS OF THE LDV RULE ON STATIONARY SOURCES.
EPA has failed to conduct a complete analysis of the impacts associated with

regulating GHGs under Section 202(a) of the CAA. EPA has openly acknowledged that the promulgation of standards to control GHG emissions from light-duty motor vehicles under Section 202(a) will inevitably trigger PSD permitting requirements for stationary sources; nonetheless, EPA has not included in this proposal an impact analysis that addresses the effect this rule will have on stationary sources. This represents a major flaw in the proposed rule. [OAR-2009-0472-7271.3, p.4]

[See docket OAR-2009-0472-7271.3, pp.4-10 for detailed comments pertaining to: EPA has Failed to Conduct an Adequate Analysis of the Impacts of the LDV Rule on Stationary Sources]

County of Greenville, SC

Greenville County joins the SC Department of Health and Environmental Control (SCDHEC) in that we do not support EPA moving forward with greenhouse gas standards under the Clean Air Act at this time and request that EPA delay this action until adequate evaluation occurs. EPA has not evaluated the detrimental collateral effect that will occur if these standards are finalized. The additional EPA regulation comes at an enormous cost with virtually no additional environmental benefits from greenhouse gas standards on light-duty vehicles. EPA acknowledges that the only way to reduce carbon dioxide (CO2) emissions from light-duty vehicles is to increase fuel economy and, similarly, that there are no emission control technologies that reduce CO2 emissions from light-duty vehicles. [NHTSA-2009-0059-0101, p.1]

According to DHEC, since the Supreme Court decision, EPA has proposed several actions. First, in February 2009, EPA decided to 'reconsider' the previous administration's decision on whether or not CO2 was a regulated pollutant under Prevention of Significant Deterioration (PSD). Second, in April 2009, EPA proposed a finding that greenhouse gases contribute to air pollution that may endanger public health or welfare. This decision has not been finalized but we understand that the 'endangerment finding' is currently at the Office of Management and Budget for review. Third, in September 2009 EPA and NHTSA proposed this rule to improve fuel economy and regulate greenhouse gases from light-duty vehicles. And finally, EPA has now proposed a 'tailoring rule' to attempt to address the 'absurd results' that will occur in the Title V and PSD permitting programs for New Source Review regulated pollutants once the light-duty vehicle GHG rule is finalized.

EPA Administrator Jackson, before the Senate Committee on Environment and Public Works and in her January 23, 2009, memorandum to all EPA employees, expressed her commitment to uphold the values of transparency and openness in conducting EPA operations. She went on the say in her memo on transparency that, 'The success of our environmental efforts depends on earning and maintaining the trust of the public we serve. The American people will not trust us to protect their health or their environment if they do not trust us to be transparent and inclusive in our decision-making. To earn this trust, we must conduct business with the public openly and fairly.' Greenville County commends EPA Administrator Jackson for her commitment to transparency.

With that being said, the county is concerned that EPA may not be as transparent as they should be and that they are sending mixed or confusing messages about the potential impact of the light-duty vehicle GHG proposal on all sources that could be impacted, in particular small business. EPA actually suggested to affected entities that they should not comment on the light-duty vehicle GHG proposal but should instead submit comments on the proposed 'tailoring rule.' SCDHEC experts believe that EPA was misleading to suggest this point and that it may inappropriately influence small business, industry, and other affected entities to refrain from commenting on an important rulemaking.

It is critical that all potentially affected entities understand the impact of EPA regulating greenhouse gas emissions under the light-duty vehicle proposal. It will be too late to address any concerns that stationary (industrial) sources have in the 'tailoring rule' as they will already be subject to PSD, as defined in the Clean Air Act, once EPA regulates greenhouse gases from light-duty vehicles. There are fundamental issues related to the 'tailoring rule.' and EPA's continued message of the 'absurd results' and 'administrative burden' of not moving forward with a 'tailoring rule' only confuses the real situation as the thresholds being proposed are 'illegal' under the Clean Air Act. Any permit issued with thresholds higher than those within the Clean Air Act would be vulnerable to appeal and litigation, even though EPA attempts to justify the tailoring rule by saying that by not doing so would create results 'so illogical or contrary to sensible policy as to be beyond anything that Congress could reasonably have intended.' We do not understand how EPA could know this and not also know that there is no guarantee their legal interpretation to exempt small sources or set different thresholds in the tailoring rule will not be challenged and upheld in court. EPA moving forward in this direction is very disturbing.

As previously stated, Greenville County has concerns about the collateral effects of EPA moving forward at this time to regulate greenhouse gas emissions from light-duty vehicles. EPA must fully evaluate the collateral impact this proposal would have on all other aspects of the Clean Air Act including, but not limited to, the impact on state and local air permitting authorities, business, industry and the economy to all areas of the country, but in particular states like South Carolina who still employ many people in the manufacturing sector. As they have not fully evaluated the impact to state and local permitting authorities, EPA has not met the requirements under the Unfunded Mandates Reform Act of 2005 for the light-duty vehicle GHG proposal. EPA even states in the tailoring rule for stationary sources, 'State permitting authorities would be paralyzed by permit applications in numbers that are orders of magnitude greater than their current administrative resources could accommodate' yet they have not taken this into consideration in the light-duty vehicle greenhouse gas proposal.

Finalizing this proposal would have a detrimental effect on our state's economy at a time when unemployment is currently at 11.6% and is only expected to increase. Once EPA 'regulates' greenhouse gas emissions from mobile sources, the Clean Air Act requires that stationary sources be regulated under the threshold requirements as specified within the Clean Air Act - regardless of any 'tailoring rule' EPA develops - as those thresholds are specified within federal law. States and local permitting authorities are totally unprepared for the millions of entities which will be required to comply with the Clean Air Act once

greenhouse gas standards are set by EPA on light-duty vehicles. The permitting process with SCDHEC will become so backlogged as to create a permitting moratorium. New business and industry will not be built; existing business will not expand; and, existing business and industry will not repair equipment if such repairs would require a permit. Again, these are detrimental effects in the economy and unintended consequences with the minuscule environmental benefit that would occur from EPA greenhouse gas standards on light-duty vehicles. [NHTSA-2009-0059-0101, pp.2-4]

The commenter has the same concerns as SCDHEC and supports their comments.

Regarding the impact to state and local permitting authorities, one of the areas that EPA has not fully evaluated is that many states, including South Carolina, have state-specific rules that EPA has required be promulgated and approved into the State Implementation Plans that address threshold levels for NSR pollutants. What EPA has also failed to recognize is that regardless of the thresholds they establish in the 'tailoring rule,' business and industry (and possibly other sources) within a SIP approved state are still subject to the state specific regulations - which comply with the federal Clean Air Act. This means that if a state were to move forward with issuing a permit utilizing the federal thresholds that are established under a tailoring rule, the permit would be ripe for appeal and litigation by third parties as the state rule is more stringent. To address this EPA has encouraged states to begin the process as soon as possible to revise these state specific requirements - even knowing that thresholds they are suggesting are illegal because the federal Clean Air Act thresholds are more stringent. We are positive that SCDHEC can not take a regulation to the South Carolina Legislature that violates federal law.

Another area that EPA has failed to carefully evaluate is related to the number of sources that could be affected once the light-duty vehicle GHG proposal goes into effect. The DHEC feels that EPA has grossly underestimated the number and types of facilities that will be impacted by the light-duty vehicle greenhouse gas proposal by becoming subject to NSR pollutants and the Title V and PSD requirements. While SCDHEC continues to evaluate the specific impact to currently permitted SC sources and will make comment to this effect to the 'tailoring rule,' EPA has estimated that 12,000 sources in South Carolina could become major sources; therefore, they would become subject to Title V and PSD permitting as soon as greenhouse gases are regulated under light-duty vehicle greenhouse gas standards. In comparison, South Carolina currently has 281 Title V permitted facilities. In addition to all of the other associated impacts, even the smallest modification or expansion activity may trigger a PSD technology review and modeling analysis. The technology review would encompass all the triggered PSD pollutants, not just greenhouse gases. Economically, these facilities would have no choice but to abandon any new project or modification. It is interesting to note that many of these facilities would be subject to PSD and Title V because of natural gas combustion, which is considered to be a clean burning fuel. In addition, it is expected that new construction would halt because of these new requirements. [OAR-2009-0472-8346, p.4]

Dow Chemical Company (Dow)

EPA should use its discretion and postpone finalizing the proposed rule until all potential impacts are fully considered.
EPA has clear legal authority to defer promulgation of a GHG emission standard under CAA Section 202, even if the Agency proceeds in the near future to finalize a positive endangerment finding under CAA Section 202. EPA should take the time to deliberately and carefully evaluate and consider all potential impacts of the proposed rule before final promulgation, as the agency itself said, "EPA recognizes that some small entities continue to be concerned about the potential impacts of the statutory imposition of PSD requirements that may occur given the various EPA rulemakings currently under consideration concerning greenhouse gas emissions." (74 FR at 49629). Even the Supreme Court in Massachusetts v. EPA, whose ruling is the impetus for this proposal, indicated that EPA has "significant latitude as to the manner, timing, content, and coordination of its regulations with those of other agencies." (Slip op. at 30). [OAR-2009-0472-7221.1, p.2]

EPA should not rush to promulgate this or any rule that has such an enormous impact on regulated entities, both industrial facilities as well as small businesses, and potentially devastating effect on the US [OAR-2009-0472-7221.1, p.2] economy without careful and considerable deliberation and discussion with affected parties. Rather, EPA should exercise its authority to defer promulgation of this proposed rule because the potential economic consequences of the Motor Vehicle Rule are massive and unquestionably outweigh any environmental benefits that would flow from EPA finalizing the rule. Instead, EPA should allow NHTSA to finalize its portion of the rule which proposes CAFÉ standards in order to allow that agency to meet its Model Year 2012 deadline without finalizing EPA's portion of the rule that proposes GHG emissions standards. The NHTSA portion of the rule alone will accomplish both agencies' stated goal of addressing emissions from light duty motor vehicles to significant environmental benefit without unleashing the devastating cascade effects of triggering the PSD program on small and stationary sources under the CAA. Delaying this rulemaking would eliminate the immediate impact of PSD on these sources, or at least allow EPA the time to evaluate other options and to truly recognize the potential impacts of this proposed rule on stationary sources. As a result, there is no need for EPA to finalize this proposed rule at this time. [OAR-2009-0472-7221.1, p.3]

In this proposal, EPA needs to consider potential impacts on stationary sources of GHGs. As a part of this rulemaking, EPA needs to consider and assess the potential impact of this rule on stationary sources. Even though the Proposed Motor Vehicle Rule purports to concern only regulation of mobile source GHG emissions, EPA has stated in other proceedings that the proposed Motor Vehicle Rule's impact is not limited to motor vehicles. In EPA's Advance Notice of Proposed Rulemaking (ANPR) to seek public input on the ramifications of regulating GHGs under the CAA (73 FR 44354), the agency stated that a Motor Vehicle Rule would trigger PSD permitting requirements for GHG emissions from myriad stationary sources throughout the United States that had never before been subject to CAA regulation. Because EPA has made it quite clear that they believe finalizing this rule will automatically impact stationary sources, they are obligated to thoroughly analyze these impacts as part of this rulemaking before final

promulgation. This evaluation should compare the impacts to any benefit the EPA rule provides above and beyond the proposed NHTSA Rule. [OAR-2009-0472-7221.1, p.3]

Duke Energy

Duke Energy Business Services LLC ("Duke Energy"), on behalf of Duke Energy Carolinas, LLC, Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., and Duke Energy Generation Services ("DEGS"), therefore submits the following comments on the Joint Motor Vehicle Proposal. Specifically, the significant flaws and shortcomings of the Joint Motor Vehicle Proposal necessitate the withdrawal of EPA's portion of the proposed rule. Duke Energy continues to support the enactment of environmentally and economically sustainable federal climate change legislation. Regulating GHGs under the CAA is the wrong approach. [OAR-2009-0472-7136.1, p.2]

The U.S. Environmental Protection Agency's ("EPA") has stated its view that promulgation of the GHG motor vehicle standards will subject GHGs to the CAA Prevention of Significant Deterioration ("PSD") program and the permitting requirements of Title V of the CAA, potentially as soon as the date on which the rule becomes final and effective. Duke Energy believes, however, that EPA's legal positions in this regard and the analysis presented in the proposed rule are seriously flawed and must be corrected. [OAR-2009-0472-7136.1, p.2]

Moreover, because of EPA's stated view that promulgation of the GHG motor vehicle standards will subject GHGs to the PSD program and the permitting requirements of Title V of the CAA, and the fact that EPA's proposed GHG motor vehicle emission standards would be an unnecessary duplication of NHTSA's proposed fuel efficiency requirements, EPA's action is more a proposal to regulate GHG emissions from stationary sources through the PSD and Title V permitting programs than it is a proposal to regulate GHG emissions from motor vehicles. Yet EPA has failed to analyze and address in its proposal what is likely the single most significant issue associated with its proposed standard – the potential application of the PSD and Title V permitting programs to GHGs emitted by stationary sources. This would include an analysis of the significant burdens the rule would place on stationary sources and the impact on jobs and the economy, at a time when unemployment is still rising and the economy is struggling to recover from recession. The EPA has instead suggested that similar issues be addressed through its Proposed Tailoring Rule and PSD Reconsideration Rule. Those proceedings, however, will not adequately evaluate the impact of EPA's proposed joint program with NHTSA; indeed, EPA's selected approach has effectively removed all meaningful opportunities to evaluate and provide comments on the effect of EPA's proposed GHG motor vehicle emission standards on stationary sources. A decision to regulate GHG emissions from stationary sources is of such magnitude that it should be made only based on careful analysis and reasoned determinations of cost, technology, and other relevant factors. It should not result from a back door approach via regulation of automobile fuel efficiency with little more than bare acknowledgement. Given the [OAR-2009-0472-7136.1, p.3] significance of the impacts that are likely to result from the establishment of a CAA-based program to regulate GHG emissions from motor vehicles that, according to EPA,

ultimately result in significant regulation of stationary sources, EPA must analyze these issues adequately as a part of this rulemaking. [OAR-2009-0472-7136.1, p.4]

In addition, because EPA's proposed regulatory program fails to add significantly to the results that could be achieved through NHTSA's proposal alone, EPA should instead consider how it might avoid prematurely triggering PSD and Title V, including through the option of simply addressing carbon dioxide ("CO2") emissions through NHTSA's CAFE standards and not through emission standards promulgated under section 202 of the CAA. EPA is under no statutory or other deadline to promulgate CAA-based regulations of GHGs. It has time and the obligation to consider and analyze fully the various issues raised by this proposed rule, and it should make use of that time. Further, because EPA has additional time to analyze its options, the Agency should examine various mechanisms for regulating under section 202(a) of the CAA that might not result in the imposition of PSD and Title V on countless stationary sources. Duke Energy does not believe that EPA's current proposal would necessarily trigger PSD for GHGs, and the Agency should assess whether it has the ability to avoid needlessly imposing such significant regulatory burdens through a rulemaking that should address only motor vehicles. [OAR-2009-0472-7136.1, p.4]

In summary, for all of foregoing reasons, EPA lacks the legal authority to issue its proposed GHG motor vehicle emission standards under section 202(a) of the CAA. Duke Energy therefore requests that EPA withdraw its portion of the joint Motor Vehicle Proposal and substantially revise its proposal to eliminate the CAA-based portion of the proposed program. Duke Energy further requests that EPA engage in a new and substantially more transparent [OAR-2009-0472-7136.1, p.4] rulemaking process that addresses all of the significant issues that regulation under section 202(a) of the CAA raises, including the ramifications for stationary sources and the economy. At the very least, EPA should reopen the comment period on its proposed GHG motor vehicle emission standards to allow the public to provide comments on these serious matters that EPA has, thus far, neglected. [OAR-2009-0472-7136.1, p.5]

In addition to the above comments, Duke Energy strongly supports the comments submitted by the Utility Air Regulatory Group on the Joint Motor Vehicle Proposal and refers EPA to those comments for a more detail discussion of the issues raised above. [OAR-2009-0472-7136.1, p.5]

Edison Electric Institute

Specific Comments on the Light-Duty Vehicle Proposal
EEI has no comment on the substance or timing of the applicability of the standards to be applied to light-duty motor vehicles. We understand that they can be applied through the NHTSA regulations without recourse to the CAA and fully support the proposal to implement the NHTSA regulations. [OAR-2009-0472-7212.1, p.2]

However, we believe it is important for EPA to consider whether it should promulgate separate rules under the CAA at this time (which would be almost identical as the

NHTSA regulations in their impact on vehicle GHG emissions). Given the interconnected nature of the CAA's provisions for regulating mobile and stationary sources, EPA currently interprets the CAA such that: 1) a final CAA section 202 rule applicable to light-duty motor vehicles would trigger regulated status 2 for the first time for stationary sources emitting GHGs as well; 2) new stationary sources and those existing sources that modify their facilities above specified significance levels would be subject to PSD permitting requirements; and 3) new and existing sources would be obligated to incorporate applicable GHG requirements in title V operating permits. Unfortunately, EPA does not address or even acknowledge these ramifications for stationary sources in the Proposed Rulemaking, nor does the Agency acknowledge the possible CAA remedies to delay such a triggering event. [OAR-2009-0472-7212.1, p.2]

EEI urges EPA to consider whether the Agency should trigger stationary source regulation before it has developed guidance and rules to apply to facilities that would be affected by such regulation. We are concerned that the agency could create a regulatory vacuum were it to proceed without developing needed guidance for regulated entities and their state and federal regulators once GHG regulations apply to stationary sources. While EPA has proposed two rules addressing some aspects of its regulation of GHG emissions from stationary sources, EPA has not proposed any approach to guide the applicability of CAA standards to specific facilities seeking to obtain permits. [OAR-2009-0472-7212.1, p.2]

EPA staff currently are working on a constricted schedule to prepare best available control technology (BACT) guidance under the PSD program, with the assistance of a working group of the Clean Air Act Advisory Committee (CAAAC), for permitting agencies charged with implementing BACT reviews for GHGs. We believe EPA should consider whether the guidance [OAR-2009-0472-7212.1, p.2] being developed will be in place when GHG regulations are applied to stationary sources and consider how the stationary source program could go forward without such guidance. We also request that EPA consider whether additional time for the CAAAC working group and EPA staff to complete such guidance would facilitate a more efficient and orderly transition to regulating GHGs under the PSD program and allow enhanced assessment of the options for incorporating GHG requirements into title V operating permits. [OAR-2009-0472-7212.1, p.3]

Given the substantial impacts of the Proposal on all stationary sources, we request that EPA consider whether administrative necessity requires it to coordinate the timing of this regulation with the issuance of guidance needed to explain how new GHG regulation will apply to permitting of stationary sources. This is the same standard that EPA proposes to apply in the Tailoring rule. Massachusetts v. EPA clearly indicated that the agency has discretion as to the "manner, timing, content, and coordination of its rulemaking with those of other agencies." [OAR-2009-0472-7212.1, p.3]

Importantly, if EPA delays finalizing the CAA section 202 portion of this proposal, NHTSA's estimates of the impacts of the proposed CAFE standards are nearly identical

to EPA's estimates of the impacts of its proposed section 202 motor vehicle emissions standards.[OAR-2009-0472-7212.1, p.3]

Finally, delaying the imposition of regulations on stationary sources would be consistent with the Administration's transition team announcement at the end of last year that Congress would have 18 months to pass comprehensive climate change legislation, obviating the need for piecemeal GHG regulation by EPA via the CAA. Such an 18-month period would continue through approximately July 2010 and provide additional time for Congress to act. Comprehensive legislation, as noted by many Administration officials and by EEI, is far preferable to CAA regulation to reduce GHG emissions. [OAR-2009-0472-7212.1, p.3]

Consequently, EEI asks EPA to consider the timing of the issuance of its proposed light duty motor vehicles rule, in light of the administrative implications such rules would have for stationary sources, to assure that the best regulatory guidance is in place when new GHG related requirements take effect. EEI appreciates the opportunity to provide comments. Questions may be directed to John Kinsman (202-508-5711) or Emily Fisher (202-508-5616). [OAR-2009-0472-7212.1, p.3]

Energy-Intensive Manufacturers Working Group

[[These comments were originally submitted in response to the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Proposed Rule, 74 Fed. Reg. 55292 (October 27, 2009). Because the comments are relevant to related agency proceedings that would culminate in the regulation of greenhouse gas emitters, including the energy-intensive trade-exposed (EITE) members of the Working Group, under the Prevention of Significant Deterioration (PSD) regulatory scheme, the commenter filed them in this docket.]]

[See Docket Number OAR-2009-0472-11276.1, pp.3-42 for all comments on this issue.]

Fertilizer Institute

Best Available Control Technology (BACT)
EPA explains in the preamble to the Prevention of Significant Deterioration (PSD) tailoring rule that the motor vehicle rule will make GHGs a regulated pollutant under the CAA. TFI understands that EPA has formed an advisory committee to evaluate BACT options and that the agency intends to issue guidance on the subject in conjunction with final regulations. However, EPA has failed to comply with its statutory obligations to analyze the cost of potential BACT to impacted industries. Whatever BACT is determined to be, complying with those requirements will pose a significant cost to the industry. [OAR-2009-0472-7279.1, p.2]

TFI requests that an economic analysis of the implementation of BACT will have on industry and more details regarding acceptable BACTs to use for pollution abatement be conducted. [OAR-2009-0472-7279.1, p.2]

Permitting of PSD and Title V Permitting Programs
EPA estimates PSD permit applications would increase by 150-fold and process time for applications could take up to ten years. Additionally, EPA estimates that Title V permit applications will increase and years of delay will result in the program. TFI does not see any near-term benefits to the PSD rule due to the backlog of permits estimated to occur. Furthermore, EPA indicates it will not issue a State Implementation Plan (SIP) call or require states to adjust their PSD rules. The result of this will be uncertainty for applicants and an overwhelmed permitting system with little effective results. [OAR-2009-0472-7279.1, p.2]

TFI requests that EPA evaluate and provide a solution to the expected permitting system conundrum. [OAR-2009-0472-7279.1, p.2]

Economic Impact Analysis (EIA)
EPA, under the CAA, is required to perform an EIA for individual rulemakings under the CAA's authority. Failure to perform this mandatory obligation is a clear violation of the CAA and jeopardizes the credibility and integrity of EPA's ability to make informed policy decisions. [OAR-2009-0472-7279.1, p.2]

TFI requests that EPA perform a full EIA and make these findings available to the public. [OAR-2009-0472-7279.1, p.2]

Georgia Department of Natural Resources

We do, however, have significant concerns with the rule as currently proposed, primarily related to the triggering of other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting). We do not believe that EPA has adequately evaluated those impacts. We do not believe that EPA has adequately evaluated the options for minimizing, or avoiding, these collateral impacts. Our concerns are described herein along with recommended changes to the proposed rule that will still produce the intended results of the rule, while minimizing, or avoiding, these collateral impacts. [OAR-2009-0472-7150.1, p.1]

EPA should evaluate, as a part of this rulemaking, whether or not other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting) will be triggered by this rule. And, if these other sections of the Clean Air Act are triggered by this rule, EPA should evaluate, as part of this rulemaking, what the impacts of that triggering are. [OAR-2009-0472-7150.1, p.1]

Our interpretation is that this rulemaking is the action that triggers other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting). However, in the proposed rule, EPA actually suggested to affected entities that they should not comment on this issue in this rulemaking, but should instead submit comments on the proposed 'Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule' (GHG Tailoring Rule). We believe that EPA was in error to suggest this

point and that it may inappropriately influence agencies and other affected entities to refrain from commenting on an important rulemaking. [OAR-2009-0472-7150.1, pp.1-2]

The EPA GHG Tailoring Rule is a wholly independent rulemaking from the Light-Duty Vehicle GHG Standards rule. The GHG Tailoring rule does not trigger the Title V permitting and New Source Review permitting requirements; the Light-Duty Vehicle GHG Standards rule does. EPA should not rely upon the GHG Tailoring rule to address this issue, particularly in light of the fact that the GHG Tailoring rule may not be in place at the time that EPA finalizes the Light-Duty Vehicle GHG Standards rule. EPA has clearly stated its intent to finalize the Light-Duty Vehicle GHG Standards rule by the end of March 2010. The public comment period on the GHG Tailoring rule ends on December 28, 2009. EPA is expected to get thousands of comments on the GHG Tailoring rule and it would have only three months to address those comments and finalize the rule. This appears to be a monumental task if EPA is going to adequately review all of the comments and make necessary revisions to the proposed rule in response to critical comments received. EPA can not assume, as part of this rulemaking, that the GHG Tailoring rule will be finalized on, or before, the Light-Duty Vehicle GHG Standards rule is finalized. [OAR-2009-0472-7150.1, p.2]

EPA failed to take into account the length of time that it will take for permitting authorities with SIP approved New Source Review (NSR) programs to go through rulemaking (and possibly some state legislatures), hiring, and training in order to implement the mandate of regulating GHG emissions under the Title V and NSR permitting programs. In Georgia, rulemaking will be required in order to insert the new GHG emission thresholds. Rulemaking will also be required in order to increase Title V fees consistent with the Clean Air Act requirement that permitting programs collect enough revenue to implement the program requirements. Given the current state of the economic situation in our state and country, this issue should not be taken lightly. Then, permitting authorities must hire and train staff to issue these complicated permits. This could take up to two years after the requirement is triggered. [OAR-2009-0472-7150.1, p.2]

More fundamentally, the GHG Tailoring Rule appears to be legally vulnerable and may not provide intended relief from the statutory permitting thresholds for PSD and Title V. If the tailoring rule is vacated, the workload for permitting authorities will increase exponentially at a time when State and Local governments are experiencing severe budgetary challenges due to the current economic climate. Vacatur of the GHG Tailoring Rule seems to be a very real possibility if promulgated as proposed. In the Preamble to the proposed rule, EPA provides a lengthy justification for adjusting the statutory permitting thresholds for PSD and Title V, relying on the legal doctrines of 'administrative necessity' and 'absurd results.' However, if the rule is challenged the D.C. Circuit Court of Appeals could hold that these arguments are unpersuasive given the circumstances. The Court could conclude that the proper way to address an excessive burden imposed by statute is to ask Congress to amend the statute. The excessive burden doesn't empower an administrative agency to rewrite the statute. The fact that EPA knowingly promulgated regulations that triggered the concepts of 'administrative

necessity' and 'absurd results,' when equivalent reductions in GHG emissions from vehicles could have been achieved without these collateral impacts, may weaken EPA's legal justification for the Tailoring Rule even further. The sound approach is to prevent the 'administrative necessity' and 'absurd results' by tailoring the GHG and CAFE standards to avoid triggering the permitting requirements, not by attempting to amend administratively the statutory permitting requirements. [OAR-2009-0472-7150.1, pp.2-3]

In short, EPA failed to consider how the rule would affect state/local air permitting authorities. More specifically, EPA failed to comply with the Unfunded Mandates Reform Act of 1995. EPA states in the preamble that this rule only affects manufacturers of cars and light trucks. However, this action has the potential to affect state/local air permitting authorities immensely because it would cause GHG emissions to become regulated under the Title V and New Source Review permitting programs. The proposed rule does not take this into account. The potential impact to state/local air permitting authorities is unprecedented and enormous. In fact, EPA acknowledges in the GHG Tailoring rule preamble that 'State permitting authorities would be paralyzed by permit applications in numbers that are orders of magnitude greater than their current administrative resources could accommodate?' [OAR-2009-0472-7150.1, p.3]

EPA claims that the proposed rule imposes no enforceable duty on any state, local or tribal governments. The basis for this claim is not understood and we believe it to be incorrect. As stated previously, the GHG Tailoring rule acknowledges that state permitting authorities will be 'paralyzed' by the workload created by the triggering of the Title V and NSR permitting provisions for GHG emissions. In the GHG Tailoring rule, EPA purports to reduce this burden by arbitrarily selecting new GHG emission thresholds of 25,000 tons per year CO2 equivalent (or in some cases 10,000 tons per year). Even if the GHG Tailoring rule is finalized as EPA has proposed it, we believe that EPA has significantly underestimated the number of sources that will become subject to the Title V and NSR permitting provisions due to the finalization of the GHG emission standards required by this rule. We will be submitting separate comments to the docket for the GHG Tailoring rule that address this issue. However, the GHG Tailoring rule does not trigger the Title V and NSR permitting provisions for GHG emissions; it only attempts to reduce the burden of that triggering effect. [OAR-2009-0472-7150.1, p.3]

We believe that EPA can accomplish the goals of this rule without triggering other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting). EPA stated in the preamble that the primary goals of this rule were to achieve substantial reductions of greenhouse gas (GHG) emissions and improvements in fuel economy. [OAR-2009-0472-7150.1, p.4]

EPA, as a policy decision, should not establish GHG emission limits under Section 202(a) of the Clean Air Act at this time. EPA and NHTSA should, instead, establish fuel economy standards that accomplish the desired goals of substantial reductions in GHG emissions and improvements in fuel economy. Therefore, the other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting) would not be triggered. [OAR-2009-0472-7150.1, p.4]

EPA is under no legal obligation (court decision or Clean Air Act requirement) to finalize GHG emission limits under Section 202(a) of the Clean Air Act at this time. The preamble states that 'EPA has the discretion to take into consideration NHTSA's CAFE standards in determining appropriate action under section 202(a), and we agree. EPA should take into consideration that the new NHTSA CAFE standards accomplish the goals of the rule and EPA should not finalize any GHG emission standards under the authority of the Clean Air Act at this time. [OAR-2009-0472-7150.1, p.4]

Virtually all of the GHG emission reductions required by the proposed rule come from the improvement to NHTSA's CAFE standards. Therefore, the additional EPA regulation comes at an enormous cost with virtually no additional environmental benefits. EPA acknowledges that the only way to reduce CO2 emissions from light-duty vehicles is to increase fuel economy and, similarly, that there are no emission control technologies that reduce CO2 emissions from Light-Duty Vehicles. [OAR-2009-0472-7150.1, p.4]

Georgia-Pacific (GP)

EPA's Failure to Fully Analyze the Burden of the Proposed Section 202 Tailpipe Rule on Stationary Sources Renders the Proposal Unlawful.
Finalization of the Section 202 Tailpipe Rule, assuming EPA also finalizes its endangerment finding, will trigger CAA permitting actions under the PSD and Title V programs. In EPA's proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule ("Tailoring Rule"), the Agency stated that the issuance of the Section 202 Rule will automatically trigger a dramatic increase in PSD (from 300 permits per year to 41,000) and Title V (from 14,000 permits per year to over 6 million) permits for stationary sources each year. Yet, EPA failed to analyze this consequence and burden on stationary sources in its Regulatory Impact Analysis for the Section 202 Tailpipe Rule and to seek public comment on this issue, violating various statutes and Executive Orders. [OAR-2009-0472-7122.1, p.1]

[See Docket Number OAR-2009-0472-7122.1, pp.1-3 for detailed comments pertaining to: EPA Conducted an Insufficient Regulatory Review and Inadequate Public Notice]

EPA Does Not Have to Issue the Section 202 Rule at This Time
In the preamble to the proposed Section 202 Tailpipe Rule, EPA states that the joint rulemaking with the NHTSA corporate average fuel economy (CAFE) standards will enable vehicle manufacturers to build a single national light duty vehicle fleet that satisfies both CAFE and federal and California emissions standards. However, due to the potential enormous implications of the Section 202 Tailpipe Rule on stationary sources (as previously noted), and the fact that EPA has multiple options available for [OAR-2009-0472-7122.1, p.3] regulating GHG from light duty vehicles, EPA should withdraw or postpone its Section 202 Tailpipe Rule. [OAR-2009-0472-7122.1, p.4]

[See Docket Number OAR-2009-0472-7122.1, pp.1-3 for detailed comments pertaining to: EPA's proposed Tailoring Rule provides a reasonable basis for withdrawing or

postponing the proposed Section 202 Rule and EPA has multiple options to issue light-duty vehicle emissions standards under the CAA]

EPA Failed to Seek Comment on the Timing of its Section 202 Rulemaking Action, Violating the Administrative Procedure Act
Notwithstanding the numerous issues upon which EPA sought comment in the proposed rule, EPA did not solicit comment on the key substantive issue that has been identified above – when the Agency should issue a Section 202 Rule. Without notice of this significant issue in the proposed Section 202 Tailpipe Rule, the proposal notice is unlawful under the Administrative Procedure Act and Section 307(d) as described above. See 42 U.S.C. § 7607(d)(3); 5 U.S.C. § 553(b)(3). [OAR-2009-0472-7122.1, p.5]

Industry Coalition

The Associations acknowledge EPA's desire to address GHG emissions from mobile sources quickly, as well as NHTSA's need to set new fuel economy standards, which must be [OAR-2009-0472-7673.1, p.1] promulgated at least 18 months before the affected model year (in this case the 2012 model year). 49 U.S.C. § 32902(g)(2). However, as proposed, the Motor Vehicle Rule ignores the enormous burdens the Rule would impose on stationary sources. This omission violates legal requirements for agency rulemaking, constitutes arbitrary and capricious action, and is simply bad policy. This is especially so because nearly all the environmental benefits EPA says will result from its promulgation of the Motor Vehicle Rule under CAA authority would also result from the NHTSA rule alone. Yet, unlike NHTSA action to raise corporate average fuel economy (CAFE) standards, the redundant EPA standards promulgated under the CAA would have regulatory impacts reaching far beyond the automotive industry and would impose billions of dollars in additional permitting and compliance costs. [OAR-2009-0472-7673.1, p.2]

Thus, although the Associations take no position on NHTSA's proposal to increase CAFE standards, we vigorously object to EPA's proposal to finalize the superfluous Motor Vehicle Rule under CAA Section 202. EPA's failure to account here for the PSD and Title V burdens it elsewhere acknowledges will flow from this rulemaking renders this rulemaking legally invalid. EPA must fully consider those burdens in this rulemaking. [OAR-2009-0472-7673.1, p.2]

EPA Must Assess and Address the Motor Vehicle Rule's Impacts on Stationary Sources Before Finalizing the Rule.
EPA's failure to account for the Title V and PSD consequences of finalizing the Motor Vehicle Rule would render the final Rule both arbitrary and capricious, and also invalid based on other procedural requirements for rulemaking.

[See Docket Number OAR-2009-0472-7673.1, pp.2-8 for detailed comments pertaining to: EPA's Failure to Analyze the PSD and Title V Effects of Finalizing the Motor Vehicle Rule Is Arbitrary and Capricious, EPA's Failure to Analyze the PSD and Title V Effects of Finalizing the Motor Vehicle Rule Runs Contrary to Procedural Requirements

and EPA's Failure to Analyze the PSD and Title V Effects of Finalizing the Motor Vehicle Rule Runs Contrary to Procedural Requirements]

PSD Permitting Requirements Need Not and Should Not Apply to Stationary Sources' GHG Emissions Solely by Virtue of EPA Finalizing the Motor Vehicle Rule
EPA could properly decline to consider the PSD impacts of the proposed Motor Vehicle Rule in this rulemaking docket only if those impacts would not, in fact, result from the Rule. EPA has stated that PSD requirements will be triggered when the proposed Motor Vehicle Rule first subjects GHG emissions from cars to control—that is, model year 2012. See PSD Interpretive Memo Reconsideration, 74 Fed. Reg. at 51545–46. But EPA can interpret the statute and regulations to avoid that result and eliminate the need to analyze the proposed Motor Vehicle Rule's effect on stationary sources in this proceeding. Moreover, by doing so, EPA would eliminate the need for the legally questionable GHG Tailoring Rule.

[See Docket Number OAR-2009-0472-7673.1, pp.8-12 for detailed comments pertaining to: EPA's View that Issuance of the Motor Vehicle Rule Automatically Triggers PSD Based Solely on Emissions of GHGs Is Inconsistent with the Plain Meaning of the CAA and EPA's Regulations and The Phrase "Pollutants Subject to Regulation" Is Also Most Reasonably Interpreted to Exclude GHGs]

EPA Should Exercise its Discretion to Defer Finalizing a Motor Vehicle Rule
EPA has clear legal authority to defer promulgation of an emission standard under CAA Section 202, even if the Agency proceeds in the near future to finalize a positive endangerment finding under CAA Section 202. It would be arbitrary and capricious for EPA not to exercise that authority because the potential economic consequences of the Motor Vehicle Rule are massive, and unquestionably outweigh any environmental benefits that would flow from EPA placing its imprimatur on the NHTSA rule.

[See Docket Number OAR-2009-0472-7673.1, pp.12-14 for detailed comments pertaining to: Nothing Compels EPA to Finalize GHG Emissions Standards for Mobile Sources, EPA Has Not Provided Adequate Reasons for Finalizing GHG Emission Standards for Mobile Sources at This Time, and There Are Numerous Compelling Reasons to Defer the Motor Vehicle Rule]

Mass Comment Campaign (48) (unknown organization)

To make matters worse, these regulations would start a regulatory cascade. EPA would start regulating emissions from millions of sources, including large buildings, churches, sports arenas, office buildings, farms, schools, hospitals' you name it. EPA will be forced to regulate greenhouse gases with many sections of the Clean Air Act, including sections 108, 111, and 112. This will further harm our economy, reduce American jobs, and worsen our employment situation. NHTSA already has the ability to regulate fuel economy without EPA further harming the economy.

Mississippi Department of Environmental Quality

We do, however, have significant concerns with the rule as currently proposed, primarily related to the triggering of other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting). We do not believe that EPA has adequately evaluated those impacts or has adequately evaluated the options for minimizing, or avoiding, these collateral impacts. In addition, restrictions on GHG emissions from vehicles do not appear necessary to achieve the goal of reducing GHGs; the CAFE standards alone will achieve this goal. Our concerns are described herein along with recommended changes to the proposed rule that will still produce the intended results of the rule, while minimizing, or avoiding, these collateral impacts.

EPA must evaluate, as a part of this rulemaking, whether or not other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting) will be triggered by this rule. And, if these other sections of the Clean Air Act are triggered by this rule, EPA must evaluate, as part of this rulemaking, what the impacts of that triggering are.

Our interpretation is that this rulemaking is the action that triggers other sections of the Clean Air Act (specifically Title V permitting and New Source Review permitting). However, in the proposed rule, EPA actually suggested to affected entities that they should not comment on this issue in this rulemaking, but should instead submit comments on the proposed 'Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule' (GHG Tailoring Rule).1 We believe that EPA was in error to suggest this point and that it may inappropriately influence agencies to refrain from commenting on an important rulemaking.

The EPA GHG Tailoring Rule is a wholly independent rulemaking from the Light-Duty Vehicle GHG Standards rule. The GHG Tailoring rule does not trigger the Title V permitting and New Source Review permitting requirements; the Light-Duty Vehicle GHG Standards rule does. EPA must not rely upon the GHG Tailoring rule to address this issue, particularly in light of the fact that the GHG Tailoring rule may not be in place at the time that EPA finalizes the Light-Duty Vehicle GHG Standards rule. EPA has clearly stated its intent to finalize the Light-Duty Vehicle GHG Standards rule by the end of March 2010. The public comment period on the GHG Tailoring rule ends on December 28, 2009. EPA is expected to get thousands of comments on the GHG Tailoring rule and it would have only three months to address those comments and finalize the rule. This appears to be a monumental task if EPA is going to adequately review all of the comments and make necessary revisions to the proposed rule in response to critical comments received. EPA cannot assume, as part of this rulemaking, that the GHG Tailoring rule will be finalized on, or before, the Light-Duty Vehicle GHG Standards rule is finalized. [OAR-2009-0472-7102.1, pp.1-5]

The commenter expresses concern about the current state of economy the negative effects of the proposed rule due increase in cost and administrative burden.

National Association of Home Builders (NAHB)

[These comments were originally submitted On December 28, 2009 to the following rulemaking docket: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 74 Fed. Reg. 55,292 (Oct. 27, 2009), Docket Number EPA-HQ-OAR-2009-0517. Because the NAHB believes that the Tailoring Rule is intertwined with other EPA actions under the Clean Air Act, the NAHB requests that a copy of the NAHB's Tailoring Rule comments also be filed to the EPA-HQ-OAR-2009-0472 docket.]

[See Docket Number EPA-HQ-OAR-2009-0472-11278, pp.4-22 for the comments specific to the PSD and Title V GHG Tailoring Rule.]]

[See Docket Number EPA-HQ-OAR-2009-0472-11278, pp.23-42 for the legal comments on EPA's Tailoring Rule and interrelated agency actions.]

National Association of Manufacturers

On November 18, 2009, the following organizations ('the Associations') jointly requested that the Environmental Protection Agency ('EPA') and the National Highway Traffic Safety Administration ('NHTSA') extend the public comment period for the Motor Vehicle GHG Rule, until December 28, 2009 and that EPA extend the public comment periods for both the GHG Tailoring Rule, and the PSD Interpretive Memo Reconsideration, until January 28, 2010 (collectively, these three rulemakings are referred to herein as the 'GHG rulemakings'): [OAR-2009-0472-11277, p.1]

American Bakers Association, American Chemistry Council, American Iron and Steel Institute, The American Meat Institute, American Petroleum Institute, Chamber of Commerce of the United States of America, Corn Refiners Association, The Institute of Shortening and Edible Oils, National Association of Manufacturers, National Chicken Council, National Council of Farmer Cooperatives, National Grain and Feed Association, National Oilseed Processors Association, National Petrochemical and Refiners Association, The National Renderers Association, Natural Gas Supply Association, Society of Chemical Manufacturers and Affiliates. [OAR-2009-0472-11277, p.2]

On November 25, 2009, EPA Assistant Administrator Gina McCarthy replied by letter to Bryan L. Brendle, Director of Energy and Resources Policy for the National Association of Manufacturers ('NAM'), denying the extension request in its entirety. The Associations hereby request that EPA reconsider its denial of the Associations' original November 18 request for extensions of the GHG rulemakings comment periods for the reasons explained in the request. Alternatively, the Associations request that EPA make comments submitted in each docket part of the docket for all three rules, considering all relevant comments received in the PSD Tailoring Rule docket in both the Motor Vehicle GHG Rule and PSD Interpretive Memo Reconsideration dockets, and vice-versa. A refusal to grant either or both of the Associations' necessary and reasonable requests would be arbitrary and capricious due to both the close timing and interrelatedness of the GHG rulemakings. [OAR-2009-0472-11277, pp.2-3]

EPA Response to Comments

The close timing of the GHG rulemakings makes it difficult for the Associations and their members to fully analyze the rules, develop useful data, and submit comments on all relevant aspects of the rules. Problematically, the GHG rulemakings were all published in the Federal Register within just one month of each other. Meanwhile, many sources, including Associations' members, are also focused and have allocated substantial resources towards analyzing and preparing to comply with the final mandatory GHG Reporting Rule for large emitting sources, which was finalized in September 2009. Further compounding the already tight timeline, the GHG rulemaking comment deadlines fall within the holiday season-the Motor Vehicle GHG Rule comments were due during the Thanksgiving holiday and the GHG Tailoring Rule comments are due immediately after Christmas, times when many U.S. businesses and state agencies are closed and/or short staffed. As the Associations explained in the November 18 request, the GHG rulemakings are legally and technically complex, with significant and likely unprecedented consequences for the Associations, their members, and the U.S. economy as a whole. Each rulemaking on its own requires sufficient time and resources to fully evaluate the consequences of the rulemaking, develop data and analyses, and formulate appropriate comments. Given the close timing of the publication of the GHG rulemakings, the current comment periods are simply insufficient to allow the Associations a fair opportunity to do so. [OAR-2009-0472-11277, p.3]

Furthermore, the GHG rulemakings are so interrelated that many comments on the GHG Tailoring Rule are equally applicable to both the PSD Interpretive Memo and the Motor Vehicle GHG Rule, and vice-versa. This is particularly important with regards to the Motor Vehicle GHG Rule's impacts on stationary sources. At the time of publication, Association members as well as many other U.S. businesses, states, and consumers, were not on notice of the Rule's severe consequences for stationary sources. The Motor Vehicle GHG Rule does not even mention, let alone fully address, the impacts on stationary sources; rather, it disingenuously presents itself as a rulemaking solely affecting light-duty motor vehicles. Not until October 27, 2009, just 30 days prior to the Motor Vehicle GHG Rule comment deadline, did the GHG Tailoring Rule's publication in the Federal Register put the American public and the regulated community officially on notice that the CAA Section 202 regulations to control GHG emission from motor vehicles would 'trigger PSD and title V applicability requirements for GHG emissions.' And EPA has still not conducted a full Regulatory Impact Analysis assessing the combined results of the three interrelated rulemakings. [OAR-2009-0472-11277, p.3]

Comments submitted in the Motor Vehicle GHG Rule docket reflect the inadequacy of public notice regarding the Rule's impacts on sources other than motor vehicles. As the South Carolina Department of Health and Environmental Control explained in comments on the Motor Vehicle GHG Rule:

We are concerned that EPA may not be as transparent as they should be and that they are sending mixed or confusing messages about the potential impact of the light-duty vehicle GHG proposal on all sources that could be impacted, in particular small business. EPA actually suggested to affected entities that they should not comment on the light-duty vehicle GHG proposal but should instead submit comments on the proposed 'tailoring

rule.' We believe that EPA was misleading to suggest this and that it may inappropriately influence small business, industry, and other affected entities to refrain from commenting on an important rulemaking. [OAR-2009-0472-11277, pp.3-4]

The absence of comments on the Motor Vehicle GHG Rule's impact on stationary sources in many submissions, reflects the accuracy of South Carolina's prediction. Many organizations have heeded EPA's direction to submit comments on PSD and Title V permitting requirements in the GHG Tailoring Rule docket only, and may have missed EPA's subsequent suggestion that the Motor Vehicle GHG Rule, and not the GHG Tailoring Rule, imposes these requirements. [OAR-2009-0472-11277, p.4]

To ensure an adequate and complete record for the GHG rulemakings, to give commenters a fair and full opportunity to analyze the proposals individually and collectively, and given the close timing and interrelatedness of the rulemakings, the Associations respectfully request that either: (1) EPA and NHTSA extend the public comment deadline for the Motor Vehicle GHG Rule until December 28, 2009, and that EPA extend the public comment deadlines for both the GHG Tailoring Rule and the PSD Interpretive Memo Reconsideration until January 28, 2010; or alternatively (2) that EPA consider comments submitted in the GHG Tailoring Rule to be submitted in both the PSD Interpretive Memo Reconsideration and Motor Vehicle GHG Rule dockets, and vice-versa. The Associations believe that a failure to grant this reasonable request would be arbitrary and capricious. [OAR-2009-0472-11277, p.4]

The NAM supports the Administration's goal to harmonize fuel efficiency standards by implementing a federal rule that will pre-empt disparate state and regional programs. However, manufacturers believe that the process established by EPA, by using the Clean Air Act as its primary statutory vehicle, is deeply flawed and will have the unintended and unmanageable consequence of triggering regulation of millions of stationary sources. By resorting to the CAA, the EPA has established a process that will undermine private and public efforts to recover from the deepest economic downturn since the 1930s. Alternatively, the EPA should promulgate a rule that adequately decouples the goal of achieving greater fuel efficiency and reduced light-duty vehicle GHG emissions from the consequence of regulating GHG emissions from millions of stationary facilities. Any failure to do so will inflict harm on the manufacturing sector for which the NAM must seek appropriate remedies, legislative or otherwise. [OAR-2009-0472-7215.1, p.5]

National Climate Coalition

Stabilizing atmospheric greenhouse gas concentrations will require the transformation of our energy, manufacturing and transportation systems. We believe that this is the work of Congress. Federal legislation should not only take a broad, flexible multi-sector approach, but also must be designed to meet multiple objectives, including energy and transportation security, reliability and affordability; ensuring the economic competitiveness of United States businesses; energy conservation; strategic technology development; and environmental performance. Such legislation should also allow for and define the appropriate involvement of other departments and agencies with expertise in

energy, environment, security and transportation in addition to EPA – something that is necessary yet not permitted under the Clean Air Act. Our highest priority must be for Congress to establish a uniform national program that will be consistent with the emerging and overarching international framework. [NHTSA-2009-0059-0086.1, p.4]

For a variety of reasons, the existing Clean Air Act is a poor mechanism for addressing climate change. Congressional intent in drafting the Clean Air Act was to identify and regulate sources based on their relatively large emissions. Such sources typically have also been financially able to bear the costs of regulation. By establishing major source thresholds, the Act excluded from regulation the large numbers of smaller sources that exist in the United States. The number of stationary sources subject to regulation has thus historically been relatively small. By all estimates, however, this number could grow by at least an order of magnitude, perhaps two, and affect for the first time many previously unaffected sources (e.g., large retail establishments, schools, hospitals and government facilities) if greenhouse gases are regulated in the same manner as criteria pollutants under NSR, and Title V — let alone §112, which has even lower thresholds for regulation. [NHTSA-2009-0059-0086.1, pp.4-5]

The permitting thresholds under the Act, however, are keyed to emissions levels that are meaningful only in the context of regulating the local and regional health and welfare impacts of lower-emitting criteria or hazardous air pollutants. Even small sources have emissions of CO2 as a result of typical fuel use that would exceed current permitting thresholds on this basis. As EPA itself underscored in the ANPR and the Tailoring Rule Proposal, the PSD and Title V programs would sweep hundreds of thousands of sources not previously subject to regulation into the scope of the Clean Air Act, at great cost and consequence for the functioning of the economy and at great administrative burden on regulated sources, EPA, the states and local governments. EPA estimates that its approach in the Tailoring Rule would avoid over $55.6 billion in the first six years of regulation – or, stated differently, in the absence of the Tailoring Rule, the cost of compliance for affected sources and permitting agencies will increase by more than $55.6 billion. [NHTSA-2009-0059-0086.1, p.5]

Paradoxically, forcing the square peg of greenhouse gas emissions into the round hole of the existing Clean Air Act also has the potential to create adverse incentives that may stifle innovation and even increase greenhouse gas emissions. This could occur, for instance, if a company decides to delay improvements that would otherwise reduce emissions intensity to avoid triggering regulatory requirements, as we have seen occur time and time again under the New Source Review programs. A practical example of this situation is a turbine upgrade at an electric generating station. While the project results in more efficient production of electricity, if that energy efficiency were projected to result in more criteria pollutant emissions on an annual basis due to increased operations, it is likely the project would not be pursued due to the time consuming and expensive requirements of the New Source Review programs, including the likely need to implement additional controls for all pollutants that exceed the NSR pollutant thresholds. That is contrary to the desired outcome. [NHTSA-2009-0059-0086.1, p.5]

Regulation under the Clean Air Act has historically focused on control of criteria and hazardous air pollutants to address the local or regional human health, welfare and environmental impacts. The architecture of the Clean Air Act is thus premised on the concept that state, regional and federal control of emissions will improve air quality in the corresponding area. This is not accurate as to greenhouse gases. The greenhouse effect is global -- and localized (or even United States-wide) emissions reductions will not result in environmental benefits to the United States in the absence of corresponding international action. Moreover, greenhouse gases at current and projected atmospheric concentrations have no known direct adverse human health impacts to which to link standards, and any environmental and welfare impacts only occur over substantial time, due to the indirect effects of aggregate global levels of greenhouse gases. Thus, greenhouse gases present a particular regulatory challenge. The same requirements that apply to emissions of criteria pollutants from stationary sources are not likely optimally to control and provide the most effective incentives to reduce greenhouse gases emissions. [NHTSA-2009-0059-0086.1, p.5]

Because the Clean Air Act is such a poor vehicle for addressing climate change, we believe that further federal legislation is the best approach to reduce emissions that may contribute to global warming. We recognize that the Supreme Court's decision in Massachusetts v. EPA may require the Agency to commence regulatory action in absence of, or in the face of delayed, Congressional action. Congress, however, is poised to act. Comprehensive climate change and energy legislation has been passed by the U.S. House of Representatives, H.R. 2454 - the American Clean Energy and Security Act of 2009 (Waxman-Markey), and the Senate is considering stand alone climate change legislation, the "Clean Energy Jobs and American Power Act" (Kerry-Boxer), and energy legislation, S. 1462 - the American Clean Energy Leadership Act of 2009 (ACELA). The NCC urges EPA and the Administration to work in support of prompt Congressional efforts, and exercise its authority only where it can adopt flexible, appropriate measures to control greenhouse gases in a manner best designed to facilitate ultimate Congressional action. [NHTSA-2009-0059-0086.1, pp.5-6]

Absent Congressional Action, Should EPA Decide To Regulate Mobile and Stationary Sources Under The Clean Air Act, It Must Select Appropriate Trigger Dates On Which Regulatory Requirements Would Apply to Stationary Sources

EPA proposed three interrelated actions with respect to greenhouse gases emissions within weeks of each other: the Light Duty Vehicle Rule, the Interpretive Rule, and the Tailoring Rule. In the Interpretive Rule proposal, EPA supports the position that a greenhouse gas becomes a "regulated pollutant" once it is "subject to regulation" in the form of an "actual control" under a final and "effective" Clean Air Act national regulation. See PSD Interpretive Rule, 74 F.R. 51538-41, 51545-46. EPA proposes that the Light Duty Vehicle Rule, which it intends to finalize by March 30, 2010, would present the first such rule applicable to any greenhouse gas emissions. See PSD Interpretive Rule, 74 F.R. 51547. Unless Congress enacts preemptive legislation, the combined effect of EPA's positions in the PSD Interpretive Rule, the Light Duty Vehicle Rule and the Tailoring Rule (which would phase-in and tailor application of PSD and

Title V to stationary sources) would be to subject stationary sources to PSD and Title V requirements on the "effective date" of the Light Duty Vehicle Rule – as soon as 60 days after publication of the final Light Duty Vehicle Rule in the Federal Register (approximately June 2010). See PSD Interpretive Rule, 74 F.R. 51545-46; Tailoring Rule, 74 F.R. 55294, 55299- 55300.

The NCC intends to submit comments on the Interpretive Rule supporting EPA's initial and currently-supported interpretation that the date on which a pollutant becomes subject to an "actual control" under a final national rule is a better measure of the date at which a pollutant becomes "subject to regulation" than the other options discussed by EPA in the Interpretive Rule. However, we also intend to indicate that we believe EPA's preferred choice of the "effective date" of such a rule, while a better choice than promulgation date, still does not properly mark the date on which a pollutant is actually controlled. Instead, it is the "first substantive compliance date" of that national rule establishing emission standards for greenhouse gases that is the date on which those greenhouse gases will be actually controlled and, thus, subject to regulation. [NHTSA-2009-0059-0086.1, pp.6-7]

Assuming for purposes of these comments that EPA will implement the "effective date" approach in the Interpretive Rule rather than the "first substantive compliance date" approach advocated by the NCC, we request that EPA use the fullest extent of its discretion to set the effective date for the Light Duty Vehicle Rule as one that gives EPA, affected sources and permitting authorities the greatest lead time for implementation of the PSD and Title V programs' applicability to greenhouse gases. In particular, we request that the effective date for the Light Duty Vehicle Rule be set no sooner than January 2, 2011 – the first date on which a 2012 model year vehicle can be produced. See Light Duty Vehicle Rule, 74 F.R. 49454; 40 CFR 85.2302-2304. [NHTSA-2009-0059-0086.1, p.7]

EPA has substantial discretion in setting the effective date of the Light Duty Vehicle Rule. While the effective date can be no sooner than 60 days after promulgation, there is no definite limit on how long after promulgation a rule must be effective. As noted by the Supreme Court in Massachusetts v. EPA," EPA [] has significant latitude as to the manner, timing, content, and coordination of its regulations with those of other agencies." Slip Op. at 30. Additionally, as documented at length by EPA in the Tailoring Rule, the long-held judicial doctrines of absurd results and administrative necessity support even agency action that would deviate from statutory language, if such action is necessary to avoid results contrary to Congressional intent or due to administrative necessity. See Tailoring Rule, 74 F.R. 55311- 55320. [NHTSA-2009-0059-0086.1, p.7]

While the "effective date" the NCC promotes for the Light Duty Vehicle Rule would differ by only six months from that which would result from applying the minimum time between promulgation and effectiveness required by the Congressional Review Act, there are legal and policy factors that make these six months crucial for affected stationary sources and permitting authorities as they scramble to comply with PSD and Title V requirements as applied to greenhouse gases. The importance of affording EPA, affected sources and permitting authorities the necessary lead time to study and evaluate the

emissions characteristics and control options for new pollutants prior to making emissions of those pollutants subject to PSD and Title V permitting requirements cannot be overstated. This is particularly true for sources that would be newly subject to Title V because of their potential to emit GHGs, and would therefore need to apply for Title V permits or synthetic minor permits (and their permitting authorities that would need to timely issue these permits). Furthermore, if phase-in approaches such as the Tailoring Rule are to provide true legal relief for potentially affected sources, the states which implement PSD and/or Title V under their own regulations will need this additional time - and perhaps more - to promulgate their own tailoring rules. [NHTSA-2009-0059-0086.1, p.7]

Thus, EPA should use the fullest extent of its discretion to set the effective date of the Light Duty Vehicle Rule's emission standards for greenhouse gases in the manner that provides the greatest lead time for EPA, affected sources and permitting authorities to comply with the PSD and Title V requirements that will be triggered by the Light Duty Vehicle Rule. In particular, the "effective date" of the Light Duty Vehicle Rule should be set no sooner than January 2, 2011, the first date on which any model year 2012 vehicle could be produced which would have to comply with the greenhouse gas emissions standards in that rule. [NHTSA-2009-0059-0086.1, pp.7-8]

The National Climate Coalition appreciates the opportunity to submit these comments and looks forward to providing further input. We encourage EPA to work with Congress towards prompt national greenhouse gas legislation. If EPA must continue to move ahead with rulemakings under the Clean Air Act, then we urge the Agency to exercise its discretion to limit application of those sections of the statute that would impose unintended economic harm and divert scarce public and private resources without commensurate benefit in stabilizing global greenhouse gas concentrations. As appropriate, in the course of regulating greenhouse gases under the statute, EPA also should seek prompt Congressional confirmation that such harmful provisions may be so limited or need not be implemented to address climate change. [NHTSA-2009-0059-0086.1, p.8]

National Cotton Ginners Association

Neither the NCGA nor other gin associations had intended to comment on this proposal since our primary concern is the effect of Greenhouse Gas (GHG) regulations on stationary sources. For this reason, we had not exhausted much effort evaluating this docket until the proposed Greenhouse Gas Tailoring Rule was proposed on October 27, 2009 (74 FR 55292). The proposed Tailoring Rule is based on the assumption that the act of regulating GHG emissions from automobiles under the Clean Air Act will trigger regulatory requirements that affect stationary sources (i.e., PSD/NSR and Title V programs) of GHG emissions. In supporting documents for the Tailoring Rule, EPA estimates that without this rule, over 6 million stationary sources will become subject to Title V, permitting requirements at a cost of over $38 billion. EPA is using the Tailoring Rule to adjust the stationary thresholds to a more manageable level, relying on "absurd

results" and "administrative necessity" doctrines as legal justifications for modifying statutory thresholds.

If the analysis of the Tailoring Rule is correct, then the additional cost burden for stationary sources should be reflected in the economic analysis for the Light Duty Vehicle GHG Rule. The impact of this rulemaking on stationary sources was not considered. Proper consideration of the complete cost picture is very important in this docket. This is especially true, considering that EPA would gain almost all of their GHG reductions from Light Duty Vehicles through the NHTSA CAFE standards. If EPA used the CAFE standards to calculate GHG reductions, the GHG reductions would remain very comparable, and the unnecessary regulatory burden on stationary sources could be avoided.

It appears that the origin of the "absurd results" and "administrative necessity" lies in this very docket, and the solution to the "absurd results" and "administrative necessity" is achievable through the CAFE standards without significant loss of GHG reduction benefits.

NCGA strongly requests that EPA review the full economic impact of this rule, considering all costs: both those currently in the Light Duty Vehicle proposed rule and those outlined in the proposed Tailoring Rule before promulgating any rule for Light Duty Vehicles. In addition, EPA should clearly evaluate the benefits of regulations solely based on CAFE standards. Finally, EPA should consider extending the comment period in this docket, considering the significant additional costs that are discussed in the Tailoring Rule proposal. [OAR-2009-0472-7209.1, pp.1-2]

National Mining Association (NMA)

NMA believes that the economic and regulatory implications a final motor vehicle rule will have for all sources of GHG emissions economy-wide will be extraordinarily significant. EPA has neglected, however, to conduct required statutory analyses of these impacts. EPA implies in this rule and explains in its proposed PSD tailoring rule that it understands the regulatory consequences under the CAA that will result when the motor vehicle rule is finalized. The agency has not, however, taken the necessary steps to avoid these consequences, nor to avoid the legal ramifications that may jeopardize the rule. [OAR-2009-0472-7237.1, p.2]

A final light-duty motor vehicle rule will trigger regulatory requirements under the PSD program of the CAA that will result in significant economic and regulatory consequences. [OAR-2009-0472-7237.1, p.2]

[See Docket Number OAR-2009-0472-7237.1, pp.1-2 for detailed comments]

NMA understands that EPA has formed an advisory committee to examine BACT options and that the agency intends to issue guidance on the subject in conjunction with final regulations. EPA has failed, however, to comply with its statutory obligations to

analyze the cost of potential BACT to impacted industries. Whatever BACT is determined to be, complying with those requirements will pose significant cost to industry. If EPA has already gathered information on the type of BACT controls that may be required for industrial source categories, it has not made that information available as part of this rulemaking docket. [OAR-2009-0472-7237.1, p.3]

[See Docket Number OAR-2009-0472-7237.1, pp.2-3 for detailed comments]

Until State PSD programs are revised, the severe permitting consequences of a final motor vehicle rule that the proposed PSD tailoring rule is designed to avoid will come to fruition. [OAR-2009-0472-7237.1, p.3]

Even if the PSD tailoring rule is finalized, and is successful accomplishing what EPA expects it to, all of the consequences described in the tailoring proposal will still occur, at least in the near term. In order for the "beneficial impacts" of the PSD tailoring rule [OAR-2009-0472-7237.1, p.3] to come to fruition, most states would first need to adjust their individual PSD programs accordingly. Although EPA approves state programs under the State Implementation Plan (SIP) process, each state program would remain legal and enforceable under state law until changed. [OAR-2009-0472-7237.1, p.4]

[See Docket Number OAR-2009-0472-7237.1, pp.3-4 for detailed comments]

EPA has failed in its statutory obligations to analyze the impacts of its proposed GHG regulations on the public.
EPA is required by relevant Executive Orders and statutes to produce studies necessary to fully analyze the large economic and regulatory consequences that the motor vehicle rule will have on major stationary sources. As has been previously stated, EPA has conducted an RIA with respect to the motor vehicle rule, but those analyses are limited to the direct benefits and effects of GHG regulation of motor vehicles, and do not address the PSD effects on major stationary sources triggered thereby. [OAR-2009-0472-7237.1, p.4]

[See Docket Number OAR-2009-0472-7237.1, pp.4-7 for detailed comments pertaining to: Regulatory Flexibility Act, CAA § 317, and Unfunded Mandates Reform Act]

EPA is not obligated to finalize the motor vehicle rule in the time frame it has identified NHTSA is under a statutory obligation to promulgate CAFE standards by March 30, 2010. EPA has identified this same date as the date it must finalize the motor vehicle rule. EPA, however, is under no statutory obligation to promulgate this rule, nor a deadline to finalize its portion of the Joint Motor Vehicle Proposal.

EPA has failed in its obligation under various Executive Orders and statutes to review the economic and regulatory impacts on major stationary sources and the economy as a whole that will result when the proposed motor vehicle rule is finalized and becomes effective. EPA's attempts to address these issues in other rulemakings are also precarious, and at the very least insufficient to satisfy the identified statutory mandates. Unlike NHTSA, EPA is not under deadline to promulgate the proposed standards. EPA has the

authority and obligation to fully analyze the broad-ranging and significant impacts that the agency itself recognizes will occur after this proposal is finalized, and to make that analysis available to the public. [OAR-2009-0472-7237.1, p.8]

For these reasons, NMA urges EPA to withdraw the motor vehicle rule and undertake a new, public process aimed at sufficiently analyzing all of the impacts that will result from such action. NMA appreciates this opportunity to submit these comments. [OAR-2009-0472-7237.1, p.8]

[See Docket Number OAR-2009-0472-7237.1, pp.7-8 for detailed comments]

National Petrochemical & Refiners Association

EPA's Section 202 Rule Should Be Withdrawn or Reproposed Since It Violates Several Statutes and Executive Orders.
In the proposed rulemaking, EPA has completely failed to take into account the enormous economic and regulatory consequences of this rulemaking on stationary sources. Even though the Agency's current interpretation of the CAA considers a final section 202 rule to constitute a "triggering" event that would require CAA permitting actions either at the time of promulgation of the rule or upon the effective date of the rule, the proposed rule and its associated "Regulatory [OAR-2009-0472-7234.1, p.3] Impact Analysis" ("RIA") thoroughly ignore this consequence, a consequence that the Agency considers to be legally inevitable. Specifically, this proposed rule: [OAR-2009-0472-7234.1, p.4]

[See Docket Number OAR-2009-0472-7234.1, pp.3-5 for detailed comments pertaining to: Violates the Paperwork Reduction Act, Violates the Regulatory Flexibility Act, Violates Executive Order 12866, Violates the Unfunded Mandates Reform Act, Violates Executive Orders 13132 and 13175, and Violates Executive Order 13211]

EPA Is Not Required Either to Propose or Finalize the Section 202 Rulemaking At This Time.
There is no statutory schedule or judicial order applicable to this rulemaking.
EPA is proposing to regulate GHG emissions from individual manufacturer fleets sold in each model year. EPA relies on CAA section 202(a) to establish an attribute-based approach for a CO2 fleet-wide standard based on the footprint of the vehicle. EPA separately relies on section 202(a) to propose per-vehicle standards for nitrous oxide and methane emissions. In addition, EPA cites several other sections of Title II of the CAA that are relevant to the standards, including provisions affecting Agency discretion with regard to useful life, certificates of conformity, testing requirements, and warranties. [OAR-2009-0472-7234.1, p.6]

[See Docket Number OAR-2009-0472-7234.1, pp.6-10 for detailed comments pertaining to: There is no statutory schedule or judicial order applicable to this rulemaking, There would not be a significant public health or environmental impact if EPA withdraws the proposed section 202 standards or delays finalization of such standards, EPA proposes to

regulate only three GHGs, and If EPA were to withdraw or delay finalization of the proposal rules, regulatory delay and uncertainty would not result]

EPA May Avoid "Impossible" Results By Redefining PSD Applicability
As indicated above, EPA is not compelled to finalize the Section 202 rulemaking at this time, but has significant discretion as to the manner, timing and content of any action that it takes to respond to Massachusetts v. EPA. In addition, however, EPA can avoid "impossible burdens" the Agency identified in the Tailoring Rule (e.g., the near-immediate expansion of state and local permitting programs to include assessments of GHG emissions) and at the same time properly confine the effects of this rulemaking to light duty vehicle manufacturers. As detailed below, the Agency should redefine PSD applicability to follow the clear language and structure of the CAA. By doing so, EPA could proceed to finalize the section 202 rulemaking while not imposing "impossible burdens" it has projected will result from this rulemaking. EPA could also avoid unnecessary and unsupported reliance on administrative law doctrines in the Tailoring Rule and comply with the CAA in the manner in which it is plainly written [OAR-2009-0472-7234.1, p.10]

[See Docket Number OAR-2009-0472-7234.1, pp.10-12 for detailed comments pertaining to: EPA May Avoid 'Impossible' Results By Redefining PSD Applicability]

EPA Should Withdraw Its Proposed Section 202 Rules or Delay Finalization of the Rules In Order to Avoid "Impossible" Burdens That Could Result from Other CAA Provisions. EPA's Legal Theories For Reducing the Burdens of the PSD and Title V programs in the Proposed Tailoring Rule Do Not Relieve the Agency of the Requirement to Analyze the Burdens That the Section 202 Rule Imposes.
Under EPA's current interpretation of the CAA and associated regulations, PSD, and Title V permitting requirements will apply to new, modified and operating sources of GHGs as of 60 [OAR-2009-0472-7234.1, p.15] days following the Federal Register publication of this rulemaking. Since EPA expects to finalize the light duty vehicle rulemaking by the end of March 2010, this would mean that EPA would seek to apply permitting requirements to new sources and sources undergoing a major modification which increased emissions by late May/June of 2010 and require various state and local permitting agencies to also apply these requirements. Under EPA's current interpretation of the relevant law and regulations, existing sources could be required to apply for Title V operating permits covering GHG emissions one year later. [OAR-2009-0472-7234.1, p.16]

[See Docket Number OAR-2009-0472-7234.1, pp.15-18 for detailed comments pertaining to: EPA has the ability to avoid 'impossible' results of this rulemaking and EPA must take time and effort to analyze the full burden of this rulemaking]

The Rulemaking Process Is Unprecedented and Designed to Reach a Predetermined Result and Therefore Violates the Requirements of the Clean Air Act and the Administrative Procedure Act
The "joint rulemaking" between EPA and NHTSA is unprecedented and calls into serious

question how each Agency exerted independent judgment in fulfilling their separate statutory responsibilities under the CAA and EPCA. Moreover, the history of this rulemaking indicates that EPA and other Administration officials engaged in a series of meetings which predated this proposal and predetermined the end result of the rulemaking process either directly or through impermissible incentives to promulgate a final rule within certain parameters. Therefore, the rulemaking violates sections 202(a) and 307(d) of the CAA and requirements of the Administrative Procedure Act. Since the issues involve the timing, stringency and final form of the promulgated standards, they are of central relevance to the rule. [OAR-2009-0472-7234.1, p.18]

[See Docket Number OAR-2009-0472-7234.1, pp.18-21 for detailed comments pertaining to: This 'joint rulemaking' is unprecedented and prevents EPA from exercising independent judgment, Agreements between the Administration, EPA, the Department of Transportation ('DOT'), the State of California and auto manufacturers have predetermined the content and overall result of this rulemaking, EPA's consideration and approval of the California waiver request under section 209 of the CAA improperly influenced the Agency's actions in this rulemaking]

The Proposed Rule Violates the Administrative Procedure Act since EPA Did Not Seek Comment on When the Agency Should Act, By Virtue of this Rulemaking, to Make GHGs "Regulated Air Pollutants" Under the Clean Air Act
In its proposed endangerment determination, EPA took comment on the question of whether the Agency should regulate GHGs individually, or as a group. EPA has otherwise indicated that finalization of the endangerment determination itself will not make any GHG a "regulated air pollutant" under the CAA. Therefore, if EPA considers this rulemaking to have the effect of making several GHGs "regulated air pollutants," the Agency must take comment on the question of when the Agency should take action to affect the regulatory status of various GHGs by making them a "regulated air pollutants" subject to "actual control" under the Clean Air Act. As demonstrated in this rulemaking and in the proposed Tailoring Rule and proposed endangerment determination, EPA fully understands its actions to have enormous consequences under the CAA. This notice, by not taking comment on when EPA should take action to impose actual controls on emissions of GHGs under the CAA is deficient under 5 U.S.C. 553(b)(3). In effect, the proposed rulemaking ignores the elephant in the room. [OAR-2009-0472-7234.1, p.22]

[See Docket Number OAR-2009-0472-7234.1, pp.22-23 for detailed comments pertaining to: The Proposed Rule Violates the Administrative Procedure Act since EPA Did Not Seek Comment on When the Agency Should Act, By Virtue of this Rulemaking, to Make GHGs "Regulated Air Pollutants" Under the Clean Air Act]

Fuel Requirements
NPRA also notes and would incorporate by reference comments filed by the American Petroleum concerning proposed fuel requirements in the Section 202 Rule. Fuel specification changes have not been proposed in this rulemaking, however the proposed rule and Draft Technical Support Document describe vehicle engine and equipment options that EPA believes will require lowering current sulfur requirements. NPRA

believes there is inadequate lead time for such an action which would require considerable analysis and assessment for its impact on refineries. NPRA also supports API comments with respect to ethanol blended certification fuel, flexible fuel vehicle credits and dedicated alternative fuel vehicles. [OAR-2009-0472-7234.1, p.25]

NISEI Farmers League

The Nisei Farmers League submits these comments on behalf of growers, packers, and shippers in California, Oregon, Utah, and Washington. NFL represents more than 1,100 operations in these states. We did not intend to participate in this docket, as our primary focus relates to the effect of Greenhouse Gas (GHG) regulations on stationary sources. For this reason, we had not spent much effort evaluating this docket until the proposed Greenhouse Gas Tailoring Rule was filed on October 27, 2009.

The proposed Tailoring Rule is based on the assumption that the act of regulating GHG emissions from automobiles under the clean air act will trigger regulatory requirements affecting stationary sources of GHG emissions. In supporting documents for the Tailoring Rule, EPA estimates that without the Tailoring Rule, over 6 million stationary sources will become subject to Title V permitting requirements, at a cost of over 38 billion dollars.

It would seem logical that if the analysis in the Tailoring rule is correct, then the additional cost burden for stationary sources should be reflected in the economic analysis for this docket. To the best of our knowledge, the impact of this rulemaking on stationary sources was not considered.

Proper consideration of the complete cost picture is very important in this docket. This is especially true, considering that EPA could gain almost all of their GHG reductions from Automobiles through NHTSA' s CAFE standards. It would seem that if EPA used the CAFE standards to calculate GHG reductions, the GHG reductions would remain very comparable, yet the regulatory burden on stationary sources could be avoided.

The proposed Tailoring Rule uses the doctrine of 'absurd results' as a portion of the justification for the proposed rule. It would appear that the origin of the 'absurd result' lies in this very docket, and the solution to the 'absurd result' is achievable in this docket without significant loss of GHG reduction benefits.

EPA should review the economic benefit of this rule, considering all costs; both those currently in this docket, and those outlined in the proposed Tailoring Rule. In addition, EPA should clearly evaluate the benefit of regulations solely based on CAFE standards. Finally EP A should consider extending the comment period in this docket, considering the significant additional costs discussed in the Tailoring Rule proposal. [OAR-2009-0472-7142.1, pp.1-2]

Peabody Energy Company

In particular, Peabody believes that EPA has failed, as a part of the motor vehicle GHG rulemaking, to conduct a number of analyses required by Executive Orders and statutes of the highly significant economic and regulatory effects that will result from PSD

regulation of major source GHG emissions. Unless these analyses are produced and made subject to comment before the motor vehicle rule is finalized, the legal status of that rule will be in jeopardy. Moreover, apart from legal requirements and as a matter of sound regulatory policy, EPA should take the necessary steps to understand the consequences that will necessarily flow when the motor vehicle rule is finalized and numerous stationary sources become subject to GHG regulation under the PSD program. [OAR-2009-0472-7223.1, p.1]

Peabody understands that EPA has proposed the tailoring rule in order to defer PSD and Title V regulation for what that rule defines as small (non-major) GHG emitters – those whose potential to emit (PTE) CO2e emissions is less than 25,000 tons per year (tpy). Peabody further understands that the motor vehicle rule preamble asks that "concerned small entities" address their comments about PSD and Title V to the tailoring rule docket. Except as relevant to our comments here, Peabody will withhold its detailed comments on the small source issue for that docket. [OAR-2009-0472-7223.1, p.1]

However, Peabody's concern as to PSD impacts in the present docket relates not to the small-source emitters but to the major-source emitters. Except for defining the major source threshold at 25,000 tpy CO2e, the tailoring rule does not affect PSD regulation of major stationary sources of GHGs and indeed specifically states that normal PSD requirements will apply to such major sources. Thus, the motor vehicle rule is the EPA regulatory decision point that triggers PSD regulation of major-source emissions of GHGs and therefore, as a matter of law, EPA's responsibility to examine the PSD consequences of that decision on major sources arises here. Accordingly, Peabody directs its comments on the major source PSD issue to the present docket and urges EPA to re-notice the rule for further comment when it has produced the necessary studies. [OAR-2009-0472-7223.1, p.2]

PSD regulation will have two types of consequences for major-source GHG-emitters: it will result in significant Best Available Control Technology (BACT) requirements, and, at least in the near term, will make it very difficult to obtain needed PSD permits or permit modifications. [OAR-2009-0472-7223.1, p.2]

Regulating light-duty motor vehicle GHG emissions will have far-reaching economic and regulatory consequences by subjecting most of the nation's industrial production to GHG regulation under the PSD program

As the tailoring rule preamble explains, EPA's motor vehicle rule will make GHGs a regulated pollutant under the Clean Air Act (CAA) and will therefore trigger PSD regulation of major source GHG-emitters. According to the tailoring rule Technical Support Document (TSD), at the 25,000 tpy CO2e threshold, some 13,600 sources are major sources of GHG emissions throughout the economy. This represents the large majority of the nation's fossil fuel-fired industrial base and accounts for 87 percent of the CO2 emitted by every stationary source of any size in America. [OAR-2009-0472-7223.1,p .2] [See Docket Number OAR-2009-0472-7223.1, pp.2-4 for a detailed discussion on this issue.]

Despite the tailoring rule, regulating light-duty motor vehicle GHG emissions will have the further consequence for major sources of essentially making it impossible for them to obtain needed permits, at least in the near term

According to EPA, without the tailoring rule, regulation of GHGs triggered by the motor vehicle rule will result in sustained regulatory gridlock in the PSD and Title V programs. EPA says that "the number of [PSD] permit applications would increase by 150-fold, an unprecedented increase that would far exceed administrative resources." Moreover, "[p]ermitting authorities have estimated that it would take 10 years to process a PSD application, on average, and the resulting backlog would affect the permit applications for all sources, not just GHG emitters. This backlog would grow by tens of thousands each year following the triggering of PSD applicability." EPA estimates that there would be "some 6.1 million" Title V permit applications, a number that is "almost 100 times greater than what Congress expected," which would lead to "multi-year delays in permit issuance." [OAR-2009-0472-7223.1, p.4]

EPA also states that this regulatory gridlock would not be confined to just small sources. As EPA states, "a literal application of the 100/250 tpy thresholds would sweep into the PSD program tens of thousands of smaller sources that Congress did not intend to include, and the resulting strain on administrative resources would preclude the hundreds of larger sources that Congress did intend to be subject to the program from obtaining permits at least for an initial period of time." [OAR-2009-0472-7223.1, p.4]

EPA says that the tailoring rule will prevent these dire consequences from occurring, but that is not the case, at least in the near term. The tailoring rule preamble frankly recognizes that most states have adopted their own PSD programs. Although these programs are submitted to and approved by EPA as a part of the State Implementation Plan (SIP) process, these programs retain independent legal force under state law. According to EPA, "virtually all of [these state permit programs] establish the PSD permitting threshold at the 100/250-tpy level," and in fact "a few states have adopted lower permitting threshold levels." Similarly, "virtually all EPA approved SIPs establish the significance level for any new pollutant that it covers – including GHG emissions, if covered – at zero." This means that, under state law in most states, once GHGs become regulated pollutants, any major-source modification that increases GHG emissions by any amount will trigger PSD applicability. [OAR-2009-0472-7223.1, pp.4-5]

Under the tailoring rule, these state PSD provisions will no longer be enforceable as a matter of federal law. But, as EPA specifically states, the 100/250 tpy state thresholds and the zero state significance levels for CO2 will remain in effect as a matter of state law. Moreover, EPA says it will not issue a SIP Call, impose a Federal Implementation Plan, or take any other action that will require states to change their current thresholds and significance levels. Thus, absent state action to revise their PSD regulations, the regulatory gridlock that EPA predicts without the tailoring rule will occur anyway. [OAR-2009-0472-7223.1, p.5]

EPA seems to be counting on the states' unilaterally revising their PSD regulations, but EPA does not allow them any time to do so before GHGs become regulated pollutants triggering PSD and Title V requirements. Many states could take a year or more to change their regulations, and many require either legislative approval or legislative review of some kind. In the meantime, the regulatory gridlock that EPA predicts – for both large and small sources – will be a reality. Of course, EPA could defer the effectiveness of the motor vehicle rule until states have taken the necessary action, but that is not what EPA proposed in the tailoring rule. Under the regulatory structure EPA proposes to implement, a very large number of sources, both large and small, will become subject to PSD GHG requirements when the motor vehicle rule goes into effect, with the resulting regulatory quagmire, and that quagmire will abate only if and when most states amend their PSD rules. And indeed, since EPA will not compel states to change their rules, and instead takes the position that states can set any thresholds and significance levels below 25,000 tpy CO2e that they want, there is no assurance that states will in fact make the necessary changes. [OAR-2009-0472-7223.1, p.5]

The impact of this state of affairs will ripple through the economy. As permitting comes to a stop because of an overwhelmed permit system, or because of uncertainty as to applicable regulatory requirements, construction activity for new projects and for a variety of building and facility expansions and upgrades will be forced to cease. This may not be the result that EPA. [OAR-2009-0472-7223.1, p.5]

EPA cannot validly argue that it is not responsible for analyzing the costs of BACT controls for major source GHG emissions because of the state role in developing BACT requirements

States that administer their own PSD programs undoubtedly play a significant role in determining BACT controls for major source emitters. But that fact does not relieve EPA of the obligation to examine the likely costs of GHG BACT controls that will be made necessary as a result of EPA's decision to regulate GHG emissions from motor vehicles. [OAR-2009-0472-7223.1, p.9]

As confirmed by the Supreme Court, although states have discretion in making BACT determinations, that discretion is ultimately controlled and circumscribed by EPA. As required by the CAA, the Agency promulgated regulations requiring states that administer their own PSD programs to submit those programs to EPA for approval as a part of their SIPs. EPA may disapprove a state's PSD SIP and/or prevent construction of a project subject to PSD if a state, in EPA's view, incorrectly applies BACT requirements. According to the Court, EPA's authority "extends to ensuring that a state permitting authority's BACT determination is reasonable in light of the statutory guides." [OAR-2009-0472-7223.1, p.9]

Thus, since it is EPA that is triggering the GHG BACT requirement by promulgating the motor vehicle GHG rule, and since it is EPA's responsibility to ensure that states are conforming to the statutory BACT requirements that EPA is triggering, it is EPA's obligation to assess the resulting economic consequences. Although EPA at this time

perhaps cannot know exactly how stringent state BACT determinations will be, it can make reasonable assumptions both as to its own minimum requirements and as to likely states requirements. [OAR-2009-0472-7223.1, p.9]

SCANA Corporation

Either EPA has failed to evaluate the number of sources that could be affected once the Light-Duty Vehicle GHG Standards go into effect carefully, or it has recklessly disregarded the substantial, negative impacts. It would appear that EPA has grossly underestimated the number and types of facilities that will be impacted by the light-duty vehicle GHG proposal by making them subject to PSD pollutants and the Title V and PSD permitting requirements . The South Carolina Department of Health and Environmental Control (SCDHEC) has identified over 800 of [OAR-2009-0472-7316, p.1] the currently permitted small sources that they project would become subject to Title V and PSD permitting by virtue of the triggering provision as soon as GHGs become regulated under Light- Duty Vehicle GHG Standards. South Carolina currently has 281 Title V permitted facilities. Did EPA evaluate the effects of a tripling of the number of Title V permitted facilities, in South Carolina alone, including the resources required to process them? We are being told to prepare for a three year permitting process, assuming resources are available. In addition to this impact, even the most minor modification or expansion activity may trigger a Prevention of Significant Deterioration (PSD) technology review and modeling analysis. And the technology review would encompass all of the triggered PSD pollutants, not just GHG. [OAR-2009-0472-7316, p.2]

The GHG Tailoring rule is ill suited to address the problems caused when the Light-Duty Vehicle GHG Standards trigger the Title V and PSD permitting requirements. EPA must acknowledge that the GHG Tailoring rule may not even be in place at the time that EPA finalizes the Light-Duty Vehicle GHG Standards. EPA has stated clearly its intent to finalize the Light- Duty Vehicle GHG Standards by the end of March 2010. The public comment period on the GHG Tailoring rule ends on December 28, 2009. EPA undoubtedly will receive thousands of comments on the GHG Tailoring rule. It would be sheer folly to assume that it can consider and resolve those comments and finalize the rule in only three months, at least if EPA plans to conduct an honest and meaningful review of comments. No doubt, it will be a monumental task for EPA to review adequately all of the comments and make necessary, meaningful, and responsive revisions to the proposed rule. [OAR-2009-0472-7316, p.2]

Recommended Alternative: EPA should not establish GHG emission limits under Section 202(a) of the Clean Air Act. Instead, EPA and NHTSA should simply work together to establish fuel economy standards that accomplish the desired goals of substantial reductions in GHG emissions and improvements in fuel economy. If this simple and direct approach were taken, the other sections of the Clean Air Act (specifically Title V permitting and PSD permitting) would not be triggered. [OAR-2009-0472-7316, p.3]

[See Docket Number OAR-2009-0472-7316, pp.1-3 for detailed comments]

Sierra Research Inc.

[Sierra Research Inc. Submitted Docket Number OAR-2009-0472-7977.1 as a comment attachment regarding the NHTSA Proposal for Average Fuel Economy Standards Passenger Cars and Light Trucks Model Years 2011-2015, Sierra Research, Inc., June 27, 2008. No other comment document from Sierra Research Inc. was received.]

South Carolina Chamber of Commerce

Specifically, EPA has failed to carefully evaluate the number of sources that could be affected once the Light-Duty Vehicle GHG Standards go into effect . We feel that EPA has grossly underestimated the number and types of facilities that will be impacted by the light-duty vehicle GHG proposal by becoming subject to NSR pollutants and the Title V and NSR permitting requirements. While we continue to evaluate the specific impact to currently permitted South Carolina (SC) sources and will make comment to this effect to the 'tailoring rule,' South Carolina Department of Health and Environmental Control (SCDHEC) has identified over 800 of the currently permitted small sources that would become subject to Title V and NSR permitting as soon as GHGs are regulated under Light-Duty Vehicle GHG Standards. In comparison, SC currently has 281 Title V permitted facilities. In addition to this impact, even the smallest modification or expansion activity may trigger a Prevention of Significant Deterioration (PSD) technology review and modeling analysis. The technology review would encompass all of the triggered NSR pollutants, not just GHG. Economically, these facilities would have no choice but to abandon any new project or modification. It is interesting to note that many of these [OAR-2009-0472-7298, p.1] facilities would be subject to NSR and Title V permitting requirements because of natural gas combustion, which is considered to be a clean burning fuel. In addition, we would expect new construction to halt because of these new requirements. [OAR-2009-0472-7298, p.2]

EPA must not rely upon the GHG Tailoring rule to address the fact that the Light-Duty Vehicle GHG Standards trigger the Title V and NSR permitting requirements. Furthermore, EPA must acknowledge that the GHG Tailoring rule may not be in place at the time that EPA finalizes the Light-Duty Vehicle GHG Standards. EPA has clearly stated its intent to finalize the Light-Duty Vehicle GHG Standards by the end of March 2010. The public comment period on the GHG Tailoring rule ends on December 28, 2009. EPA is expected to get thousands of comments on the GHG Tailoring rule and it would have only three months to address those comments and finalize the rule. This appears to be a monumental task if EPA is going to adequately review all of the comments and make necessary revisions to the proposed rule in response to critical comments received. [OAR-2009-0472-7298, p.2]

EPA clearly believes that promulgation of the proposed Section 202(a) GHG rule will be extremely costly and a regulatory burden as evidenced by its preemptory promulgation of the Tailoring Rule. EPA explicitly states that the Tailoring Rule was promulgated for the sole purpose of addressing the paralyzing costs that would be borne by stationary sources in the wake of GHG regulation under Section 202(a). EPA notes in the Tailoring Rule

that as soon as the Section 202(a) GHG rule is finalized, 'GHGs subject to regulation under that rule would become immediately subject to regulation under the PSD program.' If EPA had conducted a proper impact analysis of the proposed Section 202(a) GHG rule, it would have included an assessment of the obvious burdens that would be placed on stationary sources via the PSD permitting trigger. EPA cannot simply extricate portions of its cost analysis in order to provide a rule that is more economically feasible. Such an approach is arbitrary and does not provide the minimal required support for EPA's rule. [OAR-2009-0472-7298, p.2]

The SC Chamber of Commerce believes that many existing facilities will need new Title V or PSD permits to replace, repair or improve the efficiency of aging equipment, including energy efficiency projects. Permitting delays will force facilities to evaluate the possibility of shutting down domestic operations and relocating to beyond the United States borders. Furthermore, small businesses, such as asphalt and concrete batch plants, metals manufacturing, the remaining textile industry, food packaging, wood products, even hospitals will be subject to many more requirements than they currently are (not just GHGs but also all other NSR pollutants). It will be significantly more costly for them to receive a permit and they will experience significant permit delays, discontinued construction and loss of jobs. This permitting process will grind economic development and industrial growth to a halt causing adverse consequences to an already struggling economy. [OAR-2009-0472-7298, p.3]

[See Docket Number OAR-2009-0472-7298, pp.1-3 for detailed comments]

South Carolina Department of Health and Environmental Control

It is critical that all potentially effected entities understand the impact of EPA regulating greenhouse gas emissions under the light-duty vehicle proposal. It will be too late to address any concerns that stationary (industrial) sources have in the 'tailoring rule' as they will already be subject to PSD, as defined in the Clean Air Act, once EPA regulates greenhouse gases from light-duty vehicles. There are fundamental issues related to the 'tailoring rule,' and EPA's continued message of the 'absurd results' and 'administrative burden' of not moving forward with a 'tailoring rule' only confuses the real situation as the thresholds being proposed are 'illegal' under the Clean Air Act and violate many state laws across the country. Any permit issued with thresholds higher than those within the Clean Air Act and current state laws would be vulnerable to appeal and litigation, even though EPA attempts to justify the tailoring rule by saying that by not doing so would create results 'so illogical or contrary to sensible policy as to be beyond anything that Congress could reasonably have intended.' We do not understand how EPA could know this and not also know that there is no guarantee their legal interpretation to exempt small sources or set different thresholds in the tailoring rule will not be challenged or if challenged, upheld in court. We are very concerned with EPA moving forward in this direction.

Again, we have significant concerns about the collateral effects of EPA moving forward at this time to regulate greenhouse gas emissions from light-duty vehicles. EPA must

fully evaluate the collateral impact this proposal would have on all other aspects of the Clean Air Act including, but not limited to, the impact on state and local air permitting authorities, business, industry and the economy to all areas of the country, but in particular states like South Carolina who still employ many people in the manufacturing sector. As they have not fully evaluated the impact to state and local permitting authorities, EPA has not met the requirements under the Unfunded Mandates Reform Act of 2005 for the light-duty vehicle GHG proposal. EPA even states in the tailoring rule for stationary sources, 'State permitting authorities would be paralyzed by permit applications in numbers that are orders of magnitude greater than their current administrative resources could accommodate' yet they have not taken this into consideration in the light-duty vehicle greenhouse gas proposal.

Finalizing this proposal would have a detrimental effect on our state's economy at a time when unemployment is currently at 12.1% and is only expected to increase. Once EPA 'regulates' greenhouse gas emissions from mobile sources, the Clean Air Act requires that stationary sources be regulated under the threshold requirements as specified within the Clean Air Act -regardless of any 'tailoring rule' EPA develops -as those thresholds are specified within federal law. States and local permitting authorities are wholly unprepared for the millions of entities who will be required to comply with the Clean Air Act once greenhouse gas standards are set by EPA on light-duty vehicles. Bottom line, the permitting process will become so backlogged as to create a permitting moratorium. New business and industry will not be built; existing business will not expand; and, existing business and industry will not repair equipment if such repairs would require a permit. Again, detrimental effects and unintended consequences with the minimum environmental benefit that would occur from EPA greenhouse gas standards on light-duty vehicles, as almost all of the environmental benefit comes from NHTSA's CAFE standards.[OAR-2009-0472-7202.1, p.3]

Again, we ask that EPA not move forward until further review and understanding of the full collateral impact of regulating greenhouse gases from tailpipes is completed and appropriate public participation is allowed. We also challenge EPA to take this opportunity to develop a well thought out, comprehensive, holistic, common sense approach to air quality management that focuses on environmental results and not process. [OAR-2009-0472-7202.1, p.6]

In summary the commenter is concerned about detrimental effect on state's economy, budget shortfalls and extra work load related to permitting.

South Carolina Manufacturers Alliance (SCMA)

ACCORDING TO EPA'S OWN LEGAL ANALYSIS, GHGS ARE NOT CURRENTLY POLLUTANTS 'SUBJECT TO REGULATION' UNDER THE CAA
As evidenced by EPA's legal analysis in its recently proposed rule reconsidering the December 18, 2008 'PSD Interpretive Memo', and supported by historic Agency practice and decisions of EPA officials, GHGs are not pollutants that are currently 'subject to regulation' under the CAA. EPA has long held that for a pollutant to be 'subject to

regulation' there must be actual control measures and not mere monitoring or reporting requirements. [OAR-2009-0472-7296, p.2]

Although GHGs are not currently 'subject to regulation' under the CAA, once EPA finalizes a rule to regulate GHG emissions under CAA Section 202, legal arguments can be made that other CAA regulatory requirements will be triggered, thus affecting stationary source CAA compliance. Due to the strong possibility that EPA could be legally compelled to regulate GHG emissions from stationary sources as a result of this regulation, it is unreasonable and arbitrary for EPA to not analyze impacts on the tens of thousands of sources that could be required to limit their GHG emissions. EPA has failed to conduct a proper impact analysis. [OAR-2009-0472-7296, p.1] Such an analysis would identify the significant burdens the rule would place on stationary sources and the resulting impact on jobs and the nation's economy. The CAA is not an appropriate vehicle to regulate GHGs and such a task is better left for the members of U.S. Congress to address. [OAR-2009-0472-7296, p.2]

[See Docket Number OAR-2009-0472-7296, p.2 for detailed comments]

IF GHGS ARE REGULATED UNDER SECTION 202 OF THE CAA, IT IS LIKELY THAT OTHER REGULATORY REQUIREMENTS WILL BE TRIGGERED [OAR-2009-0472-7296, p.2]
There are strong legal arguments that indicate that if the proposed Section 202(a) GHG rule is finalized it will generate an array of other regulatory requirements. Specifically, it is likely that regulation of GHGs under Section 202 will trigger requirements under the Prevention of Significant Deterioration (PSD) program. This is acknowledged by EPA in a proposed rule published in the Federal Register on October 27, 2009 (Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Proposed Rule) (the Tailoring Rule). In the opening paragraphs of the Tailoring Rule, EPA notes that that once GHGs are regulated under Section 202(a) PSD permitting requirements will immediately apply to stationary sources emitting GHGs above the significance threshold. [OAR-2009-0472-7296, p.3]

[See Docket Number OAR-2009-0472-7296, p.3 for detailed comments]

EPA HAS FAILED TO CONDUCT AN ADEQUATE ANALYSIS OF THE IMPACTS THAT THIS MOBILE SOURCE GHG RULE WILL HAVE ON STATIONARY SOURCES
EPA has failed to conduct a complete analysis of the impacts associated with regulating GHGs under Section 202(a) of the CAA. EPA has openly acknowledged that the promulgation of standards to control GHG emissions from light-duty motor vehicles under Section 202(a) will inevitably trigger PSD permitting requirements for stationary sources; nonetheless, EPA has not included in this proposal an impact analysis that addresses the effect this rule will have on stationary sources. This represents a major flaw in the proposed rule. [OAR-2009-0472-7296, p.3]

SCMA strongly requests that EPA not proceed with finalizing the proposed Section 202(a) GHG rule because the proposed rule will trigger other regulatory requirements, and EPA has failed to conduct a proper impact analysis . This rule and the other recent GHG regulatory proposals combined demonstrate clearly that EPA should defer action to allow the U.S. Congress to settle on a national approach through comprehensive legislation that is economy-wide, which will have a better chance of balancing the economy-altering changes that the proposed finding will ultimately bring. [OAR-2009-0472-7296, p.4]

[See Docket Number OAR-2009-0472-7296, pp.3-4 for detailed comments]

South Carolina Pulp & Paper Association (SCPPA)

SCPPA believes that EPA has tremendously underestimated the number and types of facilities that will be impacted by the light-duty vehicle GHG proposal (i.e., residential home heating gas-fired furnaces above 0.5 million BTU/hour would trigger the major source thresholds for GHGs). We question whether EPA has adequately evaluated the consequences and collateral impacts of the proposed rule and request that EPA delay any action until further analysis and understanding of these impacts has been completed. [OAR-2009-0472-7479, p.1]

Even the smallest modification, energy efficiency project, or expansion activity at our facilities could trigger a Prevention of Significant Deterioration (PSD) technology review and modeling analysis. The technology review would encompass all of the triggered NSR pollutants, not just GHG. Economically, our facilities may have no choice but to abandon any new project or modification. [OAR-2009-0472-7479, p.1]

EPA must not rely upon the GHG Tailoring rule to address the fact that the Light-Duty Vehicle GHG Standards trigger the Title V and NSR permitting requirements. While this sort of rule would reduce the impacts of EPA's adoption of the GHG tailpipe standards to a degree, the impacts on businesses and regulatory authorities would still be dramatic, and they would be a direct result of the proposed GHG tailpipe standards for which EPA has never completed a statutorily required impact analysis. Furthermore, EPA must acknowledge that the GHG Tailoring rule may not be in place at the time that EPA finalizes the Light-Duty Vehicle GHG Standards, or may be rejected by the court as arbitrary and capricious and beyond EPA's Clean Air Act authority. [OAR-2009-0472-7479, p.2]

SCPPA believes that many existing facilities will need new Title V or PSD permits to operate, replace, repair or improve the efficiency of aging equipment, including energy efficiency projects. Permitting delays will force facilities to evaluate the possibility of shutting down domestic operations and relocating outside the United States. Furthermore, our smaller wood products facilities will be subject to many more requirements than they currently are (not just GHGs but also all other NSR pollutants). It will be a significant cost for them to receive permits and they will experience significant permit delays, discontinued operation, and loss of jobs. This permitting process will grind economic

development and industrial growth to a halt causing adverse consequences to an already struggling economy. [OAR-2009-0472-7479, p.2]

Recommendation
SCPPA believes that EPA should not establish GHG emission limits under Section 202(a) of the Clean Air Act. EPA should take into consideration that the new NHTSA CAFE standards accomplish the goals of the Light-Duty Vehicle GHG Standards and EPA should not finalize any GHG emission standards under the authority of the Clean Air Act. Virtually all of the GHG emission reductions required by the Light-Duty Vehicle GHG Standards come from the improvement to NHTSA's CAFE standards. Therefore, the additional EPA regulation comes at an enormous cost with virtually no additional environmental benefits. [OAR-2009-0472-7479, p.2]

Southeastern States Air Resource Managers, Inc. (SESARM)

We do, however, have significant concerns with the subject rule as currently proposed, primarily due to expected impacts from it triggering other sections of the Clean Air Act, specifically New Source Review (NSR) and Title V permitting. We do not believe that EPA has thoroughly examined these impacts. We further do not believe that EPA has adequately evaluated the options for minimizing, or avoiding, these collateral impacts. Our concerns are described herein along with recommended changes that will still produce the intended results of the proposed rule while minimizing or avoiding these collateral impacts. [OAR-2009-0472-7137.1, p.2]

EPA must evaluate, as a part of this rulemaking, whether or not other sections of the Clean Air Act will be triggered by this rule. If so, EPA must evaluate as part of this rulemaking the impacts of such triggering. Our understanding is that this rulemaking is the action that will trigger future requirements for permitting of GHGs under the NSR and Title V programs. However, in the proposed rule, EPA actually suggested that "small entities" should not comment on the triggering issue in this rulemaking, but should instead submit comments on the proposed "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule" (GHG Tailoring Rule).1 We believe that EPA was in error to suggest this point and that it may inappropriately influence small entities, other affected sources, and permitting agencies to refrain from commenting on an important rulemaking. The EPA GHG Tailoring Rule is a wholly independent rulemaking from the Light-Duty Vehicle GHG Standards Rule. The GHG Tailoring Rule does not trigger the NSR and Title V permitting requirements; the Light-Duty Vehicle GHG Standards Rule does. [OAR-2009-0472-7137.1, p.2]

EPA failed to take into account in the Light-Duty Vehicle GHG Standards Rule the length of time that it may take for permitting authorities with SIP-approved NSR programs to go through rulemaking (which requires approval of state legislatures in some cases), hiring, and training in order to implement the mandate of regulating GHG emissions under the NSR and Title V permitting programs. [OAR-2009-0472-7137.1, p.2]

EPA Response to Comments

The GHG Tailoring Rule appears to be legally vulnerable and may not provide intended relief from the NSR Prevention of Significant Deterioration (PSD) and Title V statutory permitting thresholds. If the GHG Tailoring Rule is not finalized in time or is stayed or vacated by the courts, the workload for permitting authorities will increase exponentially at a time when state and local governments are experiencing severe budgetary challenges due to the current economic climate. [OAR-2009-0472-7137.1, p.3]

EPA has failed to evaluate and quantify fully the effects of the proposed Light-Duty Vehicle GHG Standards Rule on state and local air permitting authorities. More specifically, EPA does not appear to have complied fully with the Unfunded Mandates Reform Act of 1995. EPA states in the preamble that this rule only affects manufacturers of cars and light trucks. However, the proposed rule, if finalized as currently proposed, has the potential to affect state and local air permitting authorities immensely because it would cause GHG emissions to become regulated under the NSR and Title V permitting programs. The proposed rule does not take this into account. The potential impact to state and local air permitting authorities is unprecedented and enormous. [OAR-2009-0472-7137.1, p.3]

EPA claims that the proposed Light-Duty Vehicle GHG Standards Rule imposes no enforceable duty on any state, local or tribal governments. While the rule may not impose duties on governments as regulated entities, the negative impact of the rule on state and local permitting agencies cannot be overemphasized. As stated previously, the GHG Tailoring Rule acknowledges that state permitting authorities will be "paralyzed" by the workload created by the triggering of the NSR and Title V permitting provisions for GHG emissions. [OAR-2009-0472-7137.1, p.4]

In the final Light-Duty Vehicle GHG Standards Rule, EPA should avoid or minimize the impacts of the triggering effect. EPA can accomplish the goals of this rule without triggering NSR and Title V permitting. [OAR-2009-0472-7137.1, p.4]

Virtually all of the GHG emission reductions required by the proposed Light-Duty Vehicle GHG Standards Rule will come from improvements in NHTSA's CAFE standards. EPA acknowledges that the only way to reduce CO2 emissions from light-duty vehicles is to increase fuel economy and that there are no emission control technologies that reduce CO2 emissions from light-duty vehicles. EPA states in the proposed rule that N2O and CH4 emissions are low and that the proposed rule is not designed to require technology to reduce emissions of these compounds. EPA then justifies the inclusion of the proposed emission standards with a seemingly conflicting statement that the agency is concerned about those emissions increasing in the future. Because of the enormous collateral consequences of regulating GHG emissions under the Clean Air Act at this time and because the proposed rule does not require reductions of N2O or CH4 emissions, EPA should not finalize emission standards for N2O or CH4 as part of this rulemaking. [OAR-2009-0472-7137.1, p.5]

As an alternative, should EPA promulgate GHG emission limits under Section 202(a) of the CAA, it may be possible to defer regulation of GHG emissions until the first vehicle

model year required by the Light-Duty Vehicle GHG Standards Rule. [OAR-2009-0472-7137.1, p.5]

Spurgeon, C. M.

To make matters worse, these regulations would start a regulatory cascade. EPA would start regulating emissions from millions of sources, including large buildings, churches, sports arenas, office buildings, farms, schools, hospitals—you name it. EPA will be forced to regulate greenhouse gases with many sections of the Clean Air Act, including sections 108, 111, and 112. This will further harm our economy, reduce American jobs, and worsen our employment situation. NHTSA already has the ability to regulate fuel economy without EPA further harming the economy. [OAR-2009-0472-7092.1, p. 2]

Stanton, Neil

To make matters worse, these regulations would start a regulatory cascade. EPA would start regulating emissions from millions of sources, including large buildings, churches, sports arenas, office buildings, farms, schools, hospitals—you name it. EPA will be forced to regulate greenhouse gases with many sections of the Clean Air Act, including sections 108, 111, and 112. This will further harm our economy, reduce American jobs, and worsen our employment situation. NHTSA already has the ability to regulate fuel economy without EPA further harming the economy. [OAR-2009-0472-10169, p.2]

Texas Chemical Council (TCC)

TCC opposes EPA's promulgation of the proposed light-duty vehicle rule because of significant concerns with the rulemaking process with respect to EPA's failure to perform an adequate review and analysis of the regulatory burdens and costs of this proposed rulemaking thereby depriving the public the opportunity to comment. In addition, we believe that the CAA was not designed, nor is it functionally suited, for the regulation of GHG emissions from mobile or stationary sources. Furthermore, moving forward with the rule is unnecessary since the corporate average fuel economy (CAFE) standard proposed by the National Highway Traffic Safety Administration will accomplish the same environmental benefits, but without the administrative and permitting burden that regulation of GHGs under the CAA is sure to cause. Finally, any regulation of GHG emissions under the CAA would harm the economic viability or the Texas chemical industry. [OAR-2009-0472-7290, p.2]

The Proposed Rule Contains Significant Procedural Deficiencies
In the proposed § 202 rulemaking, EPA considers the impact of the proposal on car and truck manufacturers, but provides insufficient review and analysis of the impact of this rule on stationary sources. The following statutes and Executive Orders require EPA to fully and transparently consider all regulatory costs and impacts of its proposed rules: Paperwork Reduction Act, Regulatory Flexibility Act, Unfunded Mandates Act, and Executive Orders 12866 (regulatory planning and review), 13132 (federalism implications), 13175 (coordination with Indian tribal governments) and 13211 (impacts

on energy use, supply and distribution). In the proposed rule, EPA is legally required to consider the full regulatory impact of its action on stationary sources and cannot rely on other proposed rulemakings to provide that analysis. [OAR-2009-0472-7290, p.3]

[See Docket Number OAR-2009-0472-7290, pp.2-3 for detailed comments]

The CAA was Not Designed for the Regulation of GHG Emissions
TCC strongly believes that the CAA is not the appropriate tool for regulating GHG emissions from mobile or stationary sources. Furthermore, there is no compelling reason - legal or otherwise - for EPA to proceed down this road at this time. In the Massachusetts decision, the Court gave EPA wide flexibility in the manner, timing, content and coordination of it regulations. Particularly in light of the fact that the U.S. House of Representatives has passed GHG cap-and-trade legislation, and the U.S. Senate is deliberating similar legislation, EPA should wait for Congress to proceed before it swiftly moves to regulate GHG emissions under a permitting mechanism that was not constructed, nor intended, to tackle the regulation of the vast number of sources that emit GHGs.

[See Docket Number OAR-2009-0472-7290, pp.3-6 for detailed comments]

Regulation of GHG Emissions under the CAA Would Harm the Texas Chemical Industry
The Texas chemical industry is a leader in our state's economy. Our industry provides almost 600,000 direct and indirect jobs to Texans across the state. These jobs generate $27.3 billion in earnings. The chemical industry has invested more than $50 billion in physical assets in the state and pays over $1 billion annually in state and local taxes. Chemicals are also the state's number one export at over $30 billion annually. The products manufactured in Texas account for 60% of the U.S. chemical production, which go into millions of consumer products and many of which go into energy-efficient, high performance technologies and products for Texas and the rest of the nation, such as insulation, wind and solar power equipment, lightweight vehicle parts, compact fluorescent light bulbs and energy-efficient appliances. [OAR-2009-0472-7290, p.6]

[See Docket Number OAR-2009-0472-7290, pp.6-8 for detailed comments]

Texas Cotton Ginners Association

The proposed Tailoring Rule is based on the assumption that the act of regulating GHG emissions from automobiles under the clean air act will trigger regulatory requirements affecting stationary sources of GHG emissions. In supporting documents for the Tailoring Rule, EPA estimates that without the Tailoring Rule, over 6 million stationary sources will become subject to Title V permitting requirements, at a cost of over 38 billion dollars.

It would seem logical that if the analysis in the Tailoring rule is correct, then the additional cost burden for stationary sources should be reflected in the economic analysis

for this docket. To the best of our knowledge, the impact of this rulemaking on stationary sources was not considered.

The proposed Tailoring Rule uses the doctrine of 'absurd results' as a portion of the justification for the proposed rule. It would appear that the origin of the 'absurd result' lies in this very docket, and the solution to the 'absurd result' is achievable in this docket without significant loss of GHG reduction benefits. [OAR-2009-0472-7081.1, pp.1-2]

Texas Department of Agriculture

I am specifically concerned that the GHG provisions included in the motor vehicle proposal may impose Prevention of Significant Deterioration (PSD) and Clean Air Act Title V permitting requirements on a host of stationary sources . In the proposed PSD tailoring rules, EPA estimates that nationwide 'small sources' will be subject to approximately $38 billion in permitting costs under the Title V program. [OAR-2009-0472-7300, p.1]

Texas Industry Project (TIP)

Global climate change is a serious issue that is best addressed through concerted international action and/or comprehensive federal legislation, rather than through unilateral agency regulation under the current Clean Air Act ("CAA" or the "Act"). Not only did the Supreme Court make clear in Massachusetts v. EPA that the U.S. Environmental Protection Agency ("EPA" or the "Agency") has substantial discretion regarding the timing of any rules, but the Court of Appeals for the District of Columbia ("D.C. Circuit") subsequently denied a petition to compel EPA action in response to Massachusetts v. EPA. [OAR-2009-0472-7430.1, p. 1]

More importantly, Congress is moving forward quickly on comprehensive legislation that would address the problem of climate change outside of the structure of the current Act. Despite a clear need to proceed with the utmost caution in this important area, EPA has proposed to regulate GHG emissions from motor vehicles in the Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards (the "Motor Vehicle GHG Rule"). Under EPA's current interpretation of the CAA, the Motor Vehicle GHG Rule may (as EPA has stated in the Proposed PSD and Title V GHG Tailoring Rule (the "PSD Tailoring Rule") trigger regulation of GHG emissions from millions of stationary sources, including hundreds of thousands of Texas sources, many of which have never before been regulated under the Clean Air Act ("CAA"). [OAR-2009-0472-7430.1, p. 1]

The Motor Vehicle GHG Rule, as well as its companion, the PSD Tailoring Rule, are fundamentally flawed, both procedurally and substantively, and Texas, as the nation's leading energy producer and a leader in chemical manufacturing and agriculture, could be significantly impacted by these federal rulemakings. Most notably, EPA completely failed to evaluate the burdens of triggering PSD and Title V for GHG emissions under the required federal regulatory review statutes and Executive Orders. Furthermore, even had

the Agency conducted the required burden analysis, the rule is unlawful, would devastate the Texas and national economies, and the burdens of regulating GHGs under CAA Section 202 far outweigh the insignificant environmental benefits of the GHG emission standards. [OAR-2009-0472-7430.1, pp. 1-2]

Accordingly, for all of the reasons discussed in these comments, EPA should withdraw the Motor Vehicle GHG Rule, and proceed with caution going forward by allowing both the international community and Congress time to develop a comprehensive and sensible approach to the global problem of climate change. [OAR-2009-0472-7430.1, p. 2]

[See OAR-2009-0472-7430.1, pp. 2-11 for comments related to PSD and NRS for stationary sources in Texas. These comments include the following topics: A. The Motor Vehicle GHG Rule Will Disproportionately Harm Texas, B. EPA Utterly Failed to Account for these Devastating Impacts to Texas and the Entire U.S. in its Burden Analysis of the Motor Vehicle GHG Rule, C. A Full Analysis of Actual Impacts on Sectors Beyond Autos Would Demonstrate That the Rule Cannot be Justified—the Burdens Associated with the Motor Vehicle GHG Rule Would Devastate the Texas Economy, D. EPA Should Adopt a More Reasonable Interpretation of the Clean Air Act Under which the Final Motor Vehicle GHG Rule Would Not Trigger PSD For Stationary Sources, and E. Nothing Compels EPA to Action under Section 202 at this Time—the Rule Provides Little or No Benefit and Produces Overwhelming Burdens.]

Texas Oil and Gas Association

Introduction
EPA's statement in the PSD Tailoring Rule that the Motor Vehicle GHG Rule will trigger regulation of GHG emissions from millions of stationary sources has substantive implications for TxOGA members. EPA claims that the PSD Tailoring Rule offers relief and "lessens the regulatory burden" associated with regulating GHG emissions under the ill-suited federal Clean Air Act ("CAA"). However, the proposed rule will actually impose burdens on stationary sources, including sources operated by TxOGA members. The PSD Tailoring Rule relies on questionable legal doctrines, rarely, if ever, relied on by courts, violates a host of procedural statutes and executive orders, and is ineffective on its face, as it fails to address PSD [OAR-2009-0472-11275.1, p.1] and Title V thresholds in corresponding state rules. Accordingly, TxOGA recommends that EPA withdraw the PSD Tailoring Rule and instead adopt a more rational interpretation of the CAA. [OAR-2009-0472-11275.1, p.2]

[See docket number OAR-2009-0472-11275.1, p.1&2 for detailed comments]

By Declining to Extend the Comment Periods for its GHG Rulemaking, EPA has Deprived TxOGA of a Meaningful Opportunity to Comment on the Motor Vehicle GHG Rule and the PSD Interpretive Reconsideration
On November 18, 2009, a group of trade associations led by the National Association of Manufacturers ("NAM") submitted a request to EPA to extend the comment deadlines for the Motor Vehicle GHG Rule, the PSD Interpretive Reconsideration, and the PSD

Tailoring Rule. EPA denied NAM's request. As a result, and as explained in more detail below, TxOGA has been deprived of an adequate opportunity to comment on the Motor Vehicle GHG Rule and the PSD Interpretive Reconsideration. Accordingly, TxOGA respectfully requests that EPA consider the instant comments on the PSD Tailoring Rule timely filed in both of the other GHG Rulemaking dockets. [OAR-2009-0472-11275.1, p.2]

[See docket number OAR-2009-0472-11275.1, p.2&3 for detailed comments pertaining to: The Close-Timing of the GHG Rulemaking Precluded A Thorough and Sufficient Analysis of the Rules and Public Notice Was Inadequate Regarding the Motor Vehicle GHG Rule's Impacts on Stationary Sources]

EPA's Conclusion That PSD Is Automatically Triggered By the Motor Vehicle GHG Rule Misinterprets the CAA
The PSD Tailoring Rule provides that PSD requirements will be triggered when the Motor Vehicle GHG Rule is finalized. However, the Agency relies on two questionable legal conclusions to support its factual findings that GHG emissions alone can trigger PSD permit requirements and the conclusion that, absent an "administrative necessity"-based regulatory relief rule, there will be 40,000 new PSD applications per year. These conclusions are: [OAR-2009-0472-11275.1, p.3]

The CAA requires that GHGs, as regulated pollutants, be considered in determining whether a source is a major source for purposes of PSD, even though there is no NAAQS for GHGs; and [OAR-2009-0472-11275.1, p.3]

If a source is major for GHGs, it is therefore major for all other regulated pollutants – the "major for one, major for all" policy that EPA has applied in the past to all but nonattainment NSR pollutants under the program. [OAR-2009-0472-11275.1, p.3]

[See docket number OAR-2009-0472-11275.1, pp.3-7 for detailed comments pertaining to: The CAA Limits PSD Applicability for GHGs to (1) Areas Designated as Attainment or Unclassifiable Under a GHG NAAQS or (2) Sources that Require a PSD Permit Based on Emissions of a Criteria Pollutant That Also Will Experience a Significant Increase in GHG Emissions, Alabama Power Supports the Interpretation that a NAAQS is Required as a Prerequisite to Regulation Under the Clean Air Act, and EPA Can Implement the Proper Scope of PSD Applicability Under the Existing Regulations]

Alternatively, EPA Should Interpret the Term "Pollutants Subject to Regulation" to Refer Only to Pollutants With Local or Regional Impacts
EPA should construe the phrases "any pollutant" in Section 169(1) and "any pollutant subject to regulation" in Section 165(a) to refer only to conventional pollutants whose emissions have regional or local impact, rather than any pollutant subject to regulation under the Act. Such an interpretation would automatically exclude GHGs, which are "global in nature because the GHG emissions emitted from the United States . . . become globally well-mixed." In the PSD Tailoring Rule, EPA's own analysis—which demonstrates that Congress could not have intended those CAA sections to require PSD

applicability for GHGs, because, if they did, the number of sources requiring PSD permits would rise to absurd and unanticipated levels— supports this interpretation. EPA proposes only one solution to avoid the absurdity of triggering PSD for GHGs: rewriting the statutory PSD and Title V applicability thresholds and significance levels. [OAR-2009-0472-11275.1, p.7]

[See docket number OAR-2009-0472-11275.1, pp.7-8 for detailed comments]

The PSD Tailoring Rule is Not a Relief Rule and Requires a Full Regulatory Impacts Analysis
The PSD Tailoring Rule avoids a full regulatory impacts analysis on the basis that the Rule is a "relief rule." To the contrary, EPA's decision to interpret "subject to regulation" such that motor vehicle emission standards will trigger PSD applicability for 40,000 new PSD permit applications and six million new Title V sources creates massive burdens for stationary sources. TxOGA members will experience significant impacts, including increased costs in complying with these new requirements and lengthy delays and/or a complete shut-down of new projects and project-expansions due to the Texas Commission on Environmental Quality's ("TCEQ's") inability to process the influx of new PSD and Title V permit applications. These added costs of doing business and the effective permit moratorium will result in lost jobs and lost profits for TxOGA members. [OAR-2009-0472-11275.1, p.8]

[See docket number OAR-2009-0472-11275.1, pp.8-13 for detailed comments pertaining to: Even if the PSD Tailoring Rule Offers Limited Relief for Small Sources of GHG Emissions, EPA Must Account for the Remaining Substantial Burdens Imposed by the Rule, By Failing to Assess Costs, the PSD Tailoring Rule Violates a Host of Statutes and Executive Orders That Require Analysis and Public Review of Regulatory Burdens, and The Burden Analysis for Title V was Deficient—EPA's Reliance on States' Ability to Assess Permit Fees to Cover Additional Title V Permitting Costs is Contrary to the Statute]

EPA Cannot Justify the Tailoring Rule Under the Limited and Narrow "Absurd Results" or "Administrative Necessity" Doctrines [OAR-2009-0472-11275.1, p.14]

[See docket number OAR-2009-0472-11275.1, pp.14-16 for detailed comments pertaining to: EPA's Reliance on the "Administrative Necessity" Doctrine is Unsupported by Law and EPA has Misapplied the Doctrine of Absurd Results]

EPA's Tailoring Rule Is Facially Invalid Because It Proposes to Illegally Rewrite SIP and Title V Approvals
To implement its proposed approach, EPA imagines a broad, multi-state SIP revision, retroactively inserting new major source and modification thresholds into a majority of the states' existing, approved SIPs. EPA is not suggesting that any state has asked for such a revision. Instead, EPA is announcing an assumption—that states lack the resources to implement EPA's view of the new challenge it is creating—and inserting into the states' plans EPA's chosen approach to managing the challenge. EPA is rewriting the

states' SIPs, an approach that turns on its head the structure that Congress established for SIP planning. The implications of this approach would reach well beyond the current issue, and would contravene settled law on the role of EPA and the states in SIP planning. [OAR-2009-0472-11275.1, p.17]

[See docket number OAR-2009-0472-11275.1, p.17-19 for detailed comments pertaining to: The PSD Tailoring Rule's Retroactive Re-interpretation of SIP and Title V Submittals and Approvals That Occurred Years (and in Some Cases Decades) Ago Violates Established CAA SIP Revision Procedures and is Unlikely to be Sustained by the Courts and Even if EPA Could Accomplish the Reinterpretation of SIPs and State Title V Programs Under Federal Law, the PSD Tailoring Rule Provides No Burden Relief Because States Will be Obligated to Follow Adopted State Regulations and Apply the 100/250 Ton Thresholds]

If EPA Concludes that the CAA and PSD Must Apply to GHGs, EPA Cannot Choose "Winners and Losers" Among Different Regulated Entities by Ignoring Clear CAA Definitions. EPA's Decision to Set the Thresholds Between 10,000 and 25,000 Tons CO2e/Year is Arbitrary and Capricious
Finally, EPA's selected major source thresholds of 25,000 tpy for PSD and Title V and significance level of 10,000-25,000 tpy for PSD are arbitrary and capricious because there is no health and/or welfare basis for these cut-offs. GHGs, such as CO2, are distributed roughly equally throughout the global atmosphere. As a result, localized emissions, unlike emissions of other pollutants currently regulated under the Act, have no direct effect on the region that is the source of the emissions. This stands in sharp contrast to the pollutants currently regulated under the CAA (e.g., ozone), which create local air quality problems. Therefore, GHG emissions should be viewed on a global scale for purposes of setting applicability thresholds and significance levels. [OAR-2009-0472-11275.1, p.19]

[See docket number OAR-2009-0472-11275.1, pp.19-20 for detailed comments]

Finally, Nothing Compels EPA to Action under Section 202 at this Time—the Rule Provides Little or No Benefit and Produces Overwhelming Burdens
EPA has clear legal authority to defer promulgation of Section 202 GHG emission standards thereby avoiding the need for the PSD Tailoring Rule altogether, even now that the Agency has proceeded to finalize the endangerment and cause or contribute findings under CAA Section 202. Massachusetts v. EPA recognizes that EPA retains significant discretion regarding timing of rules. And in fact, it would be arbitrary and capricious for EPA to not exercise this discretion because the economic consequences of the Motor Vehicle GHG and PSD Tailoring Rules are so disastrous, while the GHG emission standards themselves will not yield any benefits distinct from the Department of Transportation's ("DOT") proposed corporate average fuel economy ("CAFÉ") standards. There are numerous compelling reasons to defer promulgating motor vehicle GHG emission standards at this time. [OAR-2009-0472-11275.1, p.20]

EPA Response to Comments

[See docket number OAR-2009-0472-11275.1, pp.20-21 for detailed comments pertaining to: The Benefits of the Section 202 GHG Emission Standards Could be Largely Achieved Through CAFE Standards Alone and Delaying Promulgation Would Avoid 'Absurd' and 'Impossible' Results]

Utility Air Regulatory Group

Because EPA Has Not Established that Its Proposed Section 202(a) Rules Will Avert to Any Significant Extent the Endangerment EPA Proposes To Find -- and, to the Contrary, Has Presented Information that Shows Those Rules Will Not Meaningfully Address That Endangerment -- EPA Lacks Any Statutory Basis for Promulgating Those Rules. [OAR-2009-0472-7262.1, p.8. Full discussion on pp.8-10]

EPA's Proposed Motor Vehicle Rules Would Be Essentially Duplicative of NHTSA's Proposed Standards and, in Any Event, the Projected Effects of the Joint Program Are Too Slight To Fruitfully Attack Any Climate-Related Endangerment. [OAR-2009-0472-7262.1, p.11. Full discussion on pp.11-16]

Agency Analyses of the Environmental and Economic Impacts Associated with the Joint Motor Vehicle Proposal Are Either Entirely Absent or Substantially Deficient; EPA Must Prepare Proper Analyses for Public Review and Comment If It Decides To Proceed with This Rulemaking. [OAR-2009-0472-7262.1, p.16. Full discussion on pp.16-21]

EPA Must Take Into Account Reasons Why Promulgation of Final Section 202(a) Rules for GHGs Should Not Trigger PSD and Title V Permitting Requirements. [OAR-2009-0472-7262.1, p.16. Full discussion on pp.21-24]

For all of the foregoing reasons, and those presented in UARG's other comments, EPA must withdraw its proposed motor vehicle rules (and NHTSA should revise its regulations, if necessary, to address this change). If EPA decides nevertheless to proceed with its rulemaking, it must prepare and publish a supplemental notice of proposed rulemaking that corrects the deficiencies in the proposed rules as described in these comments.

Western Agricultural Processors Association

The Western Agricultural Processors Association submits these comments on behalf of the tree nut processing industry in California. WAPA did not intend to participate in this docket, as our primary focus relates to the effect of Greenhouse Gas (GHG) regulations on stationary sources. For this reason, we had not spent much effort evaluating this docket until the proposed Greenhouse Gas Tailoring Rule was filed on October 27, 2009.

The proposed Tailoring Rule is based on the assumption that the act of regulating GHG emissions from automobiles under the clean air act will trigger regulatory requirements affecting stationary sources of GHG emissions. In supporting documents for the Tailoring Rule, EPA estimates that without the Tailoring Rule, over 6 million stationary sources

will become subject to Title V permitting requirements, at a cost of over 38 billion dollars.

It would seem logical that if the analysis in the Tailoring rule is correct, then the additional cost burden for stationary sources should be reflected in the economic analysis for this docket. To the best of our knowledge, the impact of this rulemaking on stationary sources was not considered.

Proper consideration of the complete cost picture is very important in this docket. This is especially true, considering that EPA could gain almost all of their GHG reductions from Automobiles through NHTSA' s CAFE standards. It would seem that if EPA used the CAFE standards to calculate GHG reductions, the GHG reductions would remain very comparable, yet the regulatory burden on stationary sources could be avoided.

The proposed Tailoring Rule uses the doctrine of 'absurd results' as a portion of the justification for the proposed rule. It would appear that the origin of the 'absurd result' lies in this very docket, and the solution to the 'absurd result' is achievable in this docket without significant loss of GHG reduction benefits.

EPA should review the economic benefit of this rule, considering all costs; both those currently in this docket, and those outlined in the proposed Tailoring Rule. In addition, EPA should clearly evaluate the benefit of regulations solely based on CAFE standards. Finally EP A should consider extending the comment period in this docket, considering the significant additional costs discussed in the Tailoring Rule proposal. [OAR-2009-0472-7140.1, p.1]

Wood, John

In addition, under this regulation, the EPA would have the authority to regulate not only moving, but also stationary emitters of carbon dioxide. This would include almost everything that releases carbon dioxide; obvious ones like factories, businesses, and farms; and not-so-obvious ones, like schools, hospitals, and housing areas. This would also allow the government to step in and control things which they are not meant to control, such as churches or other places of worship. This regulatory cascade would therefore allow the government to control almost every facet of our lives. [OAR-2009-0472-7157.1, p.3]

EPA Response:

As indicated by the above comment summaries, EPA received numerous comments on issues related to the impacts on stationary sources, due to the Clean Air Act's provisions for permitting requirements related to the issuance of the GHG standards for new motor vehicles. These comments fall into several categories of issues: 1) comments related to EPA's interpretation of the CAA's provisions for subjecting stationary sources to permit regulation after GHG standards are set; 2) comments suggesting that EPA should fully assess (or had underestimated) the stationary source permitting impacts before finalizing the GHG vehicle rule; 3) comments suggesting that EPA did not adequately consider the permitting impact on small business sources; 4) comments suggesting that EPA should defer setting GHG standards for new motor vehicles to avoid any stationary source

permitting impacts; 5) comments stating that EPA failed to provide adequate public notice under section 307(d) of the Clean Air Act and the Administrative Procedure Act; and 6) comments related to the impacts on state and local air agencies in issuing stationary source permits .

The first category of comments pertains to EPA's interpretation of the CAA's provisions for when pollutants are "subject to regulation" for the purposes of the federal PSD permitting program after this rule is promulgated. This issue is addressed in EPA's final action on Reconsideration of Interpretation of Regulations that Determine Pollutants Covered by Clean Air Act Permitting Programs ("permitting program interpretation"), which was issued on March 29, 2010. Among other things, the Agency's final permitting program interpretation explains that the PSD permitting requirements will not apply to a newly regulated pollutant until a regulatory requirement to control emissions of that pollutant "takes effect." In addition, the permitting program interpretation addresses several questions regarding the applicability of the PSD and Title V permitting programs to GHGs upon the promulgation of EPA regulations establishing limitations on emissions of GHGs from vehicles under Title II of the CAA. As explained in the permitting program interpretation, EPA has determined that PSD and Title V permitting requirements will not apply to GHG emissions until at least January 2, 2011, which is the earliest date by which model year 2012 vehicles meeting the proposed GHG standards can be sold in the United States. This determination is consistent with the request made by a number of commenters here, including the National Climate Coalition.

The second category of comments suggests that EPA must fully assess the permitting impacts on stationary sources, including its estimates of how many sources are likely to be subject to GHG permitting requirements. These are issues that EPA is addressing in developing its final action on the proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 74 FR 55292 (October 27, 2009) ("Tailoring Rule"). The various comments on consideration of the economic impacts of the PSD permitting provisions fail to recognize that any analysis of such impacts would not aid EPA in determining what GHG standards to adopt in this rulemaking. Impacts on stationary source are not related to any of the issues EPA needs to consider and decide in determining the content of the GHG standards that will apply to automobile manufacturers. The same response applies to those commenters stating that EPA must assess impacts on stationary sources in this rule if it is promulgated before the tailoring rule. Analyses of indirect impacts on stationary sources are not legally relevant to the standard setting issues under consideration in this rule. Moreover, as noted above, EPA has determined in the permitting program interpretation that GHGs will not be air pollutants "subject to regulation" earlier than January 2, 2011, consistent with the GHG control requirements finalized in this rule. In addition, EPA plans to finalize the Tailoring Rule in the very near future, and the final Tailoring Rule will address the applicability of PSD requirements for GHG-emitting stationary sources that are not presently subject to PSD permitting. EPA addresses below the separate issue of whether EPA should delay issuance of this rule because of concerns raised over PSD and Title V permitting.

The third category of comments, relating to small business impacts, is addressed in Section 5.14 of this Response to Comments document, including EPA's response to comments regarding compliance with the Regulatory Flexibility Act. As stated in that response, EPA is certifying that the rule does not have a significant impact on a substantial number of small entities after considering the impacts of the regulatory requirements contained in this final rule, on the small entities directly subject to the rule. Accordingly, EPA is able to certify this rule under the RFA because small entities are exempt from regulation under the rule. As explained in that response, this rulemaking is limited to issues involved in setting emissions standards for large motor vehicle manufacturers, and EPA would not be able to account for any potential indirect impacts from separate statutory requirements on entities not directly subject to or impacted by this rule. Accordingly, because the RFA requires the agency to look only at the "small entities to which the proposed rule will apply" and small entities "subject to the requirement" of the specific rule in question, 5 U.S.C. § 603(b), the RFA does not apply to small entities indirectly affected by the regulation of other entities.

The fourth category of comments suggested that EPA should defer setting GHG standards for new motor vehicles to avoid such stationary source permitting impacts. EPA is issuing these final GHG standards for light-duty vehicles as part of its efforts to expeditiously respond to the Supreme Court's nearly three year old ruling in Massachusetts v. EPA, 549 U.S. 497 (2007). In that case, the Court held that greenhouse gases fit within the definition of air pollutant in the Clean Air Act, and that EPA is therefore compelled to respond to the rulemaking petition under section 202(a)(1) by determining whether or not emissions from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. The Court further ruled that, in making these decisions, the EPA Administrator is required to follow the language of section 202(a)(1) of the CAA. The Court stated that under section 202(a), "[i]f EPA makes [the endangerment and cause or contribute findings], the Clean Air Act requires the agency to regulate emissions of the deleterious pollutant." 549 U.S. at 534. As discussed above, EPA has made the two findings on contribution and endangerment. 74 FR 66496 (December 15, 2009). Thus, EPA is required to issue standards applicable to emissions of this air pollutant from new motor vehicles[1].

The Court properly noted that EPA retained "significant latitude" as to the "timing ... and coordination of its regulations with those of other agencies" (id.). However, it has now been nearly three years since the Court issued its opinion, and the time for delay has passed. In the absence of these final standards, there would be three separate federal and state regimes independently regulating light-duty vehicles to increase fuel economy and reduce GHG emissions: NHTSA's CAFE standards, EPA's GHG standards, and the GHG standards applicable in California and other states adopting the California standards. This joint EPA-NHTSA program will allow automakers to meet all of these requirements with a single national fleet because California has indicated that it will accept compliance with EPA's GHG standards as compliance with California's GHG

[1] EPA consequently disagrees strongly with the view of Duke Energy and others that "EPA lacks the legal authority to issue its proposed GHG motor vehicle emission standards under section 202(a) of the CAA".

standards. 74 FR at 49460. California has not indicated that it would accept NHTSA's CAFE standards by themselves. Without EPA's vehicle GHG standards, the states will not offer the federal program as an alternative compliance option to automakers and the benefits of a harmonized national program will be lost. California and several other states have expressed strong concern that, without comparable federal vehicle GHG standards (not fuel economy standards), the states will not offer the federal program as an alternative compliance option to automakers. Letter dated February 23, 2010 from Commissioners of California, Maine, New Mexico, Oregon and Washington to Senators Harry Reid and Mitch McConnell (Docket EPA-HQ-OAR-2009-0472). The automobile industry also strongly supports issuance of these rules to allow implementation of the national program and avoid "a myriad of problems for the auto industry in terms of product planning, vehicle distribution, adverse economic impacts and, most importantly, adverse consequences for their dealers and customers." Letter dated March 17, 2010 from Alliance of Automobile Manufacturers to Senators Harry Reid and Mitch McConnell, and Representatives Nancy Pelosi and John Boehner (Docket EPA-HQ-OAR-2009-0472). Thus, without EPA's GHG standards as part of a federal harmonized program, important GHG reductions as well as benefits to the automakers and to consumers would be lost.[2] In addition, delaying the rule would impose significant burdens and uncertainty on automakers, who are already well into planning for production of MY 2012 vehicles, relying on the ability to produce a single national fleet. Delaying the issuance of this final rule would very seriously disrupt the industry's plans.

Instead of delaying the LDV rule and losing the benefits of this rule and the harmonized national program, EPA is directly addressing concerns about stationary source permitting in other actions that EPA is taking with regard to such permitting. That is the proper approach to address the issue of stationary source permitting, as compared to delaying the issuance of this rule for some undefined, indefinite time period.

Some parties have argued that EPA's issuance of this light-duty vehicle rule amounts to a denial of various administrative requests pending before EPA, in which parties have requested that EPA reconsider and stay the GHG endangerment finding published on December 15, 2009. That is not an accurate characterization of the impact of this final rule. EPA has not taken final action on these administrative requests, and issuance of this vehicle rule is not final agency action, explicitly or implicitly, on those requests. Currently, while we carefully consider the pending requests for reconsideration on endangerment, these final findings on endangerment and contribution remain in place. Thus under section 202(a) EPA is obligated to promulgate GHG motor vehicle standards, although there is no statutory deadline for issuance of the light-duty vehicle rule or other motor vehicle rules. In that context, issuance of this final light-duty vehicle rule does no more than recognize the current status of the findings -- they are final and impose a rulemaking obligation on EPA, unless and until we change them. In issuing the vehicle rule we are not making a decision on requests to reconsider or stay the endangerment finding, and are not in any way prejudicing or limiting EPA's discretion in making a final decision on these administrative requests.

[2] As discussed elsewhere, EPA's GHG standards achieve greater overall reductions in GHGs than NHTSA's CAFE standards.

A fifth category of comments stated that EPA had failed to give adequate notice under section 307 (d) of the Clean Air Act and the Administrative Procedure Act because EPA did not solicit comment on when to issue the vehicle rule or present information on stationary source indirect impacts. EPA in fact "recognize(d) that some small entities continue to be concerned about the potential impacts of the statutory imposition of PSD requirements" and directed commenters to address those concerns in the PSD tailoring rule. 74 FR at 49629. The number of comments received certainly indicates that commenters were aware of the issue. More to the point, EPA gave notice on all issues relevant to this rulemaking. Commenters that request consideration of the economic impacts of the PSD permitting provisions fail to recognize that any analysis of such impacts would not aid EPA in determining what GHG standards to adopt in this rulemaking. Such impacts are not related to any of the issues EPA needs to consider and decide in determining the content of the GHG standards that will apply to automobile manufacturers.

Finally, a number of state entities stated that EPA failed to comply with the Unfunded Mandates Reform Act of 1995 because the rule has the potential to affect state/local air permitting authorities because it would cause GHG emissions to become regulated under the Title V and New Source Review permitting programs. This issue is addressed in comment response 5.14.

7.2 Endangerment Finding

Organization: Arthur G. Randol
Clark, Roy
Coalition for Responsible Regulation
Competitive Enterprise Institute
Custom Lights and Iron
Ford, Jonathan
Hagen, David L.
Shaw, Donald F.
Weber, David

Comment:

Arthur G. Randol

A commenter resubmits comments and attachments previously submitted on the April 24, 2009 Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under the Clean Air Act (herein referred to as the Findings) and the associated Technical Support Document (TSD) dated April 17, 2009. The commenter notes the submitted comments and attachments include detailed references to science, data, and models used to justify comments in the Endangerment Finding which are also the basis for this proposed vehicle rule. The comments pertain to the validity of models used for the Endangerment Finding analysis, consideration of economic welfare and national energy

security consequences, implications for the National Ambient Air Quality Standards (NAAQS) regulation, and implications for energy costs. [See OAR-2009-0472-7254.1, pp.1-6, and OAR-2009-0472-7254.2, pp.1-44 for significant commentary on the Endangerment Finding]

Coalition for Responsible Regulation

CRR strongly opposes EPA's proposed Greenhouse Gas Vehicle Emission Standards Rulemaking, 74 Fed. Reg. 49454-49789 (Sept. 28, 2009) ('Proposed Vehicle Rule'), on the grounds that it presupposes a finding that GHGs, including CO2, endanger public health or welfare. EPA does so prematurely, without scientific basis, and when a separate, still-pending EPA rulemaking is currently evaluating this key scientific issue.

Notwithstanding EPA's explicit acknowledgement that the regulation of GHGs contemplated in the Proposed Vehicle Rule cannot take place until the Proposed Endangerment Finding is first finalized, EPA has nevertheless proceeded to make a *de facto* endangerment finding in its Proposed Vehicle Rule without a supporting administrative record and without adequate consideration of the underlying climate change science, data or literature. In conclusory, unsubstantiated fashion, EPA asserts: '[t]he primary greenhouse gases of concern are directly emitted by human activities ... These gases, once emitted, remain in the atmosphere for decades to centuries ... The heating effect caused by the human-induced buildup of the greenhouse gases in the atmosphere is very likely the cause of most of the observed global warming over the last 50 years. The key effects of climate change observed to date and projected to occur in the future include, but are not limited to, more frequent and intense heat waves, more severe wildfires, degraded air quality, heavier and more frequent downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources, continued ocean acidification, harm to agriculture, and harm to wildlife and ecosystems. 74 Fed. Reg. at 49508. *See also id* at 49630, where a number of similarly unsubstantiated statements are made.

Virtually every one of EPA's bold assertions about climate change in the Proposed Vehicle Rule are factually and/or scientifically either demonstrably incorrect or lack supporting scientific basis. Some of CRR's members, as well as other commenters, have already systematically rebutted all of EPA's assertions, with supporting scientific documentation, in the detailed Comments the Coalition submitted in EP A's Proposed Endangerment Rulemaking [OAR-2009-0472-7053.1, p.1]

Clark, Roy

The commenter asserts the emission of greenhouse gases from motor vehicles does not pose any threat to the Earth's climate. The commenter indicates: "In spite of everything that has been published about CO_2 induced global warming and the effects of related greenhouse gases, no quantitative relationship between climate change and atmospheric CO_2 concentration has ever been demonstrated because none exists. The entire global warming case is based on the empirical speculation that the observed 100 ppm

anthropogenic increase in atmospheric CO_2 concentration over the last 200 years has produced an 'average' increase of 1 degree Celsius in the meteorological surface air temperature."

The commenter asserts that this is flagrant scientific fraud based on deliberate distortions of the historical temperature record and invalid computer simulation by an elite group of climate 'scientists' which has been made abundantly clear by the recent availability of long requested documents from the UK Hadley Climate Center. [OAR-2009-0472-7179.1, p. 1]

Shaw, Donald F.

A commenter asserts the globe has not warmed for the last 11 years and recent peer-reviewed papers have indicated that the latest IPCC report (2007) exaggerates the temperature rise by using large positive feedback factors. The feedback factors are not scientifically determined and some noted scientists claim that they are actually negative. The commenter indicates that some scientists have recently indicated that the effects of methane and aerosols have been underestimated and that the impact of CO_2 on warming may be only half that previously believed and the IPCC report erroneously dismisses natural variations as well as methane and other gasses as being significant. [OAR-2009-0472-7270, pp. 1-2]

Custom Lights and Iron

Another commenter indicates that the climate change science is weak at best and it is necessary to wait for better data. The commenter indicates there has been no proof of warming since 1997 based on observational data despite increasing CO_2 in the atmosphere. [OAR-2009-0472-7110, p.1]

Hagen, David L.

A commenter notes the EPA's Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act are critically flawed by ignoring:

- The global oil production rates and the necessity of rapidly finding alternatives to replace rapid declines in existing oil production.
- The costs and rate limitations to providing alternative fuels.
- The investment required to develop alternative fuels.
- The Principles of Scientific Forecasting.
- The Hurst-Kolgomorov parameters of natural climate change.

The commenter also asserts the EPA is relies on politically-biased science by relying only on the IPCC which has a political mandate to find evidence for anthropogenic climate change. The commenter also indicates the EPA reliance on IPCC models is fatally flawed by ignoring the major impact of solar/climate correlations, and overestimating the influence of CO2. [OAR-2009-0472-7218.1, p.2]

Competitive Enterprise Institute

The proposed standards are authorized only if EPA determines that "air pollution" related to GHG emissions from new motor vehicles "may reasonably be anticipated to endanger public health or welfare." However, as explained in my comment on EPA's endangerment proposal, EPA has not exercised its judgment with regard to the fundamental scientific issues – detection, attribution, and sensitivity – deferring instead to literature reviews produced by external authorities. Moreover, the core scientific issues are more "unsettled" today than at any time in the past decade. For example, MIT Professor Richard Lindzen's recent satellite study of top-of-the-atmosphere radiative flux indicates that climate sensitivity is six times lower than the mid-range estimate of the Intergovernmental Panel on Climate Change (IPCC). [OAR-2009-0472-7281.1, p.9]

Ford, Jonathan

The commenter asserts that CO2 is not a pollutant. [OAR-2009-0472-7674]

Weber, David

I have not seen convincing scientific evidence that CO2 causes global warming and I have not seen any evidence that global warming will be bad for the environment or that global warming is a health issue. The EPA paper saying that GHG's are a health and safety risk is incorrect and it is not backed up with any data. I have seen on-line reports as evidence that the recent warming of the last 100 years (compared to the last 2000 years of direct or indirect measurements) is a normal fluctuation from natural forces and that it is unrelated to CO2 in the atmosphere.

But, even if GHG's do increase temperature, my opinion is that the world would be greener if the average temperature was higher. A warmer earth would increase the temperature of the world's oceans. The higher temperature will cause higher rainfall. Plants grow best with higher rainfall, higher temperature and higher CO2 concentration. So, the area of usable agricultural land (i.e. non-desert land and non-permafrost land) will increase if we have more GHG's and higher temperatures.

The Supreme Court [Massachusetts v. EPA] ruled that the EPA may regulate CO2, only if, they determine that CO2 is a GHG and that GHG's are a health risk. They have not done so for either postulate. So, this EPA regulation is not constitutional. [OAR-2009-0472-1410]

EPA Response:

This rulemaking is on the issues relevant to issuing emissions standards for new motor vehicles under Section 202(a) of the Clean Air Act. The comments are not relevant to the issues and decisions before the Agency in this standard setting rulemaking, as they relate to the separate rulemaking on the endangerment and contribution findings.

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). Comments in that rulemaking were carefully reviewed and considered in that rulemaking and addressed in the associated Response to Comments document, available at: http://www.epa.gov/climatechange/endangerment.html. EPA is not responding to them here as they are not relevant to this rulemaking.

EPA refers commenters to the Response to Comments Document associated with the endangerment findings, available at http://www.epa.gov/climatechange/endangerment.html, for numerous detailed responses to comments, including the following topics:

- attribution of observed climate change to anthropogenic emissions of greenhouse gases (Volume 3)
- validity of observations and data used by EPA to determine trends in increasing global mean temperatures (Volume 2)
- discussion of the use of IPCC, USGCRP, and NRC reports as the primary scientific basis for the Findings, and response to claims that IPCC is a politically biased organization (Volume 1)

Finally, EPA refers the commenter to the Findings, TSD, and Response to Comments document for detailed discussion of the multiple lines of evidence that the climate system is warming and that most of that warming over the last 50 years is very likely due to human emissions of GHGs.

Organization: Arthur G. Randol
Clark, Roy
Coalition for Responsible Regulation (Holland & Hart)
Congress of Racial Equality
Ford, Jonathan
Hagen, David L.
Shaw, Donald F.
Spurgeon, C. M.
Wood, John S.

Comment:

A few commenters refer to the computer files released from the Climate Research Unit (CRU) at the East Anglia University, UK and indicate it seriously questions the veracity of the temperature data that has been widely used in the IPCC and other reports. The commenter indicates that according to news reports the released files and e-mails revealed that the leading scientists from the US and UK (that provide key temperature data to the IPCC) have apparently fudged the data to exaggerate warming and suppress temperature declines using "tricks" and cherry-picked data. The commenter also asserts there is evidence that the peer review process has been corrupted and technical papers suppressed that question the reported plots and temperatures. Another commenter

indicates the recently released CRU e-mails show scientists refusing to release the data and models for independent scientific review.

A commenter indicates: "Due to the recent release of the e-mails and data from "Climatic Research Institute at the University of East Anglia" (which has excessive influence over the IPCC), this proposed rulemaking as well as any other actions related to Greenhouse Gas Emission Standards must be postponed until an independent audit of any climate temperature increase due to CO2 has been scientifically verified and all data for this determination has been made public, along with the questionable computer model used." Commenters request that the EPA suspend any actions pending the outcome of all investigations. One commenter indicates "[i]n light of recent developments within the scientific community on climate data and manipulation of the peer-review process, EPA should hold off on any further proposed rulemaking regarding any GHG's until a formal and full investigation is completed."

EPA Response:

This rulemaking is on the issues relevant to issuing emissions standards for new motor vehicles under Section 202(a) of the Clean Air Act. The comments are not relevant to the issues and decisions before the Agency in this standard setting rulemaking, as they relate to the separate rulemaking on the endangerment and contribution findings.

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). Comments in that rulemaking were carefully reviewed and considered in that rulemaking and addressed in the associated Response to Comments document, available at: http://www.epa.gov/climatechange/endangerment.html. EPA is not responding to them here as they are not relevant to this rulemaking.

EPA addressed comments on the recently disclosed CRU e-mails in Volume 11 of the Response to Comments document associated with the final Findings, which is available at http://www.epa.gov/climatechange/endangerment.html. In addition, EPA has received multiple administrative petitions for reconsideration of the Findings, which raise issues related to the released CRU emails. Responses are under development and will be made public when completed. Also see the response to the following comment.

Organization: Coalition for Responsible Regulation (Holland & Hart)

Comment:

The commenter opposes EPA's Proposed Vehicle Rule on the grounds that it presupposes a finding that GHGs endanger public health and welfare and EPA does so prematurely, without scientific basis, and when a separate, still pending EPA rulemaking is currently evaluating this key scientific issue. The commenter urges the EPA Administrator not to finalize the proposed Vehicle Rule until EPA's Proposed Endangerment Finding has been rejected or supported by sound and comprehensive scientific evidence; and until

whatever ensuing Petitions for Reconsideration or Petitions for Review regarding the Proposed Endangerment Finding have been finally mid fully resolved. The commenter asserts that proceeding with the Proposed Vehicle Rule prior to finalization and judicial review of the Proposed Endangerment Finding would violate EPA's statutory charge, as reinforced by the Supreme Court in *Massachusetts v. EPA*, 549 U.S. at 533, to first make a finding of GHG endangerment, only after which EPA may prescribe regulations and promulgate standards to control GHG emissions. [OAR-2009-0472-7053.1, p.4]

EPA Response:

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). This rulemaking is on the issues relevant to issuing emissions standards for new motor vehicles under Section 202(a) of the Clean Air Act. The comments are not relevant to the issues and decisions before the Agency in this standard setting rulemaking, as they relate to the separate rulemaking on the endangerment and contribution findings.

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). EPA notes that these comments, references, and attachments previously submitted by the commenter were carefully reviewed and fully addressed in the Final Findings published in the Federal Register on December 15, 2009 (74 FR 66496) and associated Response to Comments document, available at:
http://www.epa.gov/climatechange/endangerment.html EPA is not responding to them here as they are not relevant to this rulemaking.

EPA is issuing these final GHG standards for light-duty vehicles as part of its efforts to expeditiously respond to the Supreme Court's nearly three-year-old ruling in Massachusetts v. EPA, 549 U.S. 497 (2007). In that case, the Court held that GHGs fit within the definition of air pollutant under in the Clean Air Act, and that EPA is therefore compelled to respond to the rulemaking petition under section 202(a) by determining whether or not emissions from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare , or whether the science is too uncertain to make a reasoned decision. The Court further ruled that, in making these decisions, the EPA Administrator is required to follow the language of section 202(a) of the CAA. The Court stated that under section 202(a), "[i]f EPA makes [the endangerment and cause or contribute findings], the Clean Air Act requires the agency to regulate emissions of the deleterious pollutant." 549 U.S. at 534. As discussed above, EPA has made the two findings on contribution and endangerment. 74 FR 66496 (December 15, 2009). Thus, EPA is required to issue standards applicable to emissions of this air pollutant from of new motor vehicles.

The Court properly noted that EPA retained "significant latitude" as to the "timing ... and coordination of its regulations with those of other agencies" (id.). However it has now been nearly three years since the Court issued its opinion, and the time for delay has passed. In the absence of these final standards, there would be three separate federal and

state regimes independently regulating light-duty vehicles to increase fuel economy and reduce GHG emissions: NHTSA's CAFE standards, EPA's GHG standards, and the GHG standards applicable in California and other states adopting the California standards. This joint EPA-NHTSA program will allow automakers to meet all of these requirements with a single national fleet because California has indicated that it will accept compliance with EPA's GHG standards as compliance with California's GHG standards. 74 FR at 49460. NHTSA's CAFE standards by themselves would not lead to this result. Without EPA's vehicle GHG standards, the states will not be able to offer the federal program as an alternative compliance option to automakers and the benefits of a harmonized national program will be lost. California and several other states have expressed strong concern that, without comparable federal vehicle GHG standards, the states will not be able to offer the federal program as an alternative compliance option to automakers. Letter dated February 23, 2010 from Commissioners of California, Maine, New Mexico, Oregon and Washington to Senators Harry Reid and Mitch McConnell (Docket EPA-HQ-OAR-2009-0472). The automobile industry also strongly supports issuance of these rules to allow implementation of the national program and avoid "a myriad of problems for the auto industry in terms of product planning, vehicle distribution, adverse economic impacts and, most importantly, adverse consequences for their dealers and customers." Letter dated March 17, 2010 from Alliance of Automobile Manufacturers to Senators Harry Reid and Mitch McConnell, and Representatives Nancy Pelosi and John Boehner (Docket EPA-HQ-OAR-2009-0472). Thus, without EPA's GHG standards as part of a federal harmonized program, important GHG reductions as well as benefits to the automakers and to consumers would be lost.[3] In addition, delaying the rule would impose significant burdens and uncertainty on automakers, who are already well into planning for production of MY 2012 vehicles, relying on the ability to produce a single national fleet. Delaying the issuance of this final rule would very seriously disrupt the industry's plans

Instead of delaying the light-duty vehicle rule and losing the benefits of this rule and the harmonized national program, EPA is directly addressing concerns about stationary source permitting in other actions that EPA is taking with regard to such permitting. That is the proper approach to address the issue of stationary source permitting, as compared to delaying the issuance of this rule for some undefined, indefinite time period.

Some parties have argued that EPA's issuance of this light-duty vehicle rule amounts to a denial of various administrative requests pending before EPA, in which parties have requested that EPA reconsider and stay the GHG endangerment finding published on December 15, 2009. That is not an accurate characterization of the impact of this final rule. EPA has not taken final action on these administrative requests, and issuance of this vehicle rule is not final agency action, explicitly or implicitly, on those requests. Currently, while we carefully consider the pending requests for reconsideration on endangerment, these final findings on endangerment and contribution remain in place. Thus under section 202(a) EPA is obligated to promulgate GHG motor vehicle standards, although there is no statutory deadline for issuance of the light-duty vehicle rule or other

[3] As discussed elsewhere, for a variety of reasons EPA's GHG standards achieve greater overall reductions in GHGs than NHTSA's CAFE standards.

motor vehicle rules. In that context, issuance of this final light-duty vehicle rule does no more than recognize the current status of the findings -- they are final and impose a rulemaking obligation on EPA, unless and until we change them. In issuing the vehicle rule we are not making a decision on requests to reconsider or stay the endangerment finding, and are not in any way prejudicing or limiting EPA's discretion in making a final decision on these administrative requests.

Organization: Consumers Energy

Comment:

The Joint Motor Vehicle Proposal contains a number of significant flaws and shortcomings that necessitate withdrawal of EPA's portion of the proposed rule. EPA's analysis demonstrates that it cannot properly reach an affirmative endangerment finding given the inability of the emission standards to avert or to attack fruitfully the source of GHG-related endangerment. Because an affirmative endangerment finding in this context cannot be legally made, EPA lacks the authority to finalize its proposed GHG motor vehicle emission standards under section 202(a) of the CAA. In addition, the analyses of economic and environmental costs and benefits of the Joint Motor Vehicle Proposal are wholly insufficient and cannot support EPA's proposed standards. [OAR-2009-0472-7264.1, p.2]

Unlike NHTSA, EPA is under no statutory deadline to promulgate the standards that it is now considering. It has the time and the obligation to analyze more fully its regulatory proposal and the wide-ranging impacts that it anticipates will likely be incurred after its finalization. Finally, EPA has failed even to consider possible ways in which it might avoid prematurely imposing significant regulatory burdens, like PSD and Title V requirements, on stationary sources while pursuing mobile source regulation under section 202(a). These are matters of the utmost significance, and EPA cannot simply ignore them consistent with its obligations under the CAA. For all of the foregoing reasons, Consumers Energy agrees with UARG and requests that EPA withdraw its portion of the Joint Motor Vehicle Proposal, that NHTSA revise its regulations as may be appropriate to address this change, and that EPA engage in a new, more thoroughly reasoned regulatory decision-making process while providing adequate public notice and opportunity for comment on these important issues. [OAR-2009-0472-7264.1, p.2]

EPA Response:

This rulemaking is on the issues relevant to issuing emissions standards for new motor vehicles under Section 202(a) of the Clean Air Act. The comments are not relevant to the issues and decisions before the Agency in this standard setting rulemaking, as they relate to the separate rulemaking on the endangerment and contribution findings and to other pending actions before EPA. See the responses above for further discussion of EPA's reasons for issuing this vehicle rule at this time. In addition, the comment provides no details on their objections to EPA's analyses of environmental and economic impacts.

EPA Response to Comments

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). Comments in that rulemaking were carefully reviewed and considered in that rulemaking and addressed in the associated Response to Comments document, available at: http://www.epa.gov/climatechange/endangerment.html. EPA is not responding to them here as they are not relevant to this rulemaking.

Organization: Duke Energy

Comment:

Duke Energy Business Services LLC ("Duke Energy"), on behalf of Duke Energy Carolinas, LLC, Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., and Duke Energy Generation Services ("DEGS"), therefore submits the following comments on the Joint Motor Vehicle Proposal. Specifically, the significant flaws and shortcomings of the Joint Motor Vehicle Proposal necessitate the withdrawal of EPA's portion of the proposed rule. Duke Energy continues to support the enactment of environmentally and economically sustainable federal climate change legislation. Regulating GHGs under the CAA is the wrong approach. [OAR-2009-0472-7136.1, p.2]

The U.S. Environmental Protection Agency's ("EPA") has stated its view that promulgation of the GHG motor vehicle standards will subject GHGs to the CAA Prevention of Significant Deterioration ("PSD") program and the permitting requirements of Title V of the CAA, potentially as soon as the date on which the rule becomes final and effective. Duke Energy believes, however, that EPA's legal positions in this regard and the analysis presented in the proposed rule are seriously flawed and must be corrected. [OAR-2009-0472-7136.1, p.2]

The Joint Motor Vehicle Proposal and its supporting documentation makes clear that EPA's proposed GHG motor vehicle emission standards are largely duplicative of NHTSA's proposed program and that EPA's proposal will not add in any significant manner to the GHG reductions and associated impacts of NHTSA's proposed CAFE standards. Therefore, EPA cannot properly reach an affirmative endangerment finding to satisfy the requirements of the CAA's test for finding "endangerment," rendering EPA's proposed GHG motor vehicle emission [OAR-2009-0472-7136.1, p.2] standards legally (and scientifically) unjustified. Because an affirmative endangerment finding cannot be legally made, EPA lacks the authority to finalize its proposed GHG motor vehicle standards under section 202(a) of the CAA. [OAR-2009-0472-7136.1, p.3]

EPA Response:

This rulemaking is on the issues relevant to issuing emissions standards for new motor vehicles under Section 202(a) of the Clean Air Act. The comments are not relevant to the issues and decisions before the Agency in this standard setting rulemaking, as they relate to the separate rulemaking on the endangerment and contribution findings.

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). Comments in that rulemaking were carefully reviewed and considered in that rulemaking and addressed in the associated Response to Comments document, available at: http://www.epa.gov/climatechange/endangerment.html. EPA addressed comments in that rulemaking claiming that EPA could not make an endangerment finding because of the relationship of EPA's GHG standards to NHTSA's CAFE standards. See 74 FR 66496, 66507-508 (December 15, 2009). EPA is not responding to them here as they are not relevant to this rulemaking.

Organization: Texas Commission on Environmental Quality

Comment:

In providing these comments, the TCEQ emphasizes that it does not support EPA's actions to regulate GHG under the federal Clean Air Act (CAA). As stated in TCEQ comments dated June 23, 2009, to EPA's Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases, the CAA is not an appropriate vehicle for the regulation of GHG, and the proposed endangerment finding, if finalized, would likely force EPA to begin regulating other sources through other major CAA programs resulting in significant impacts to the economy of Texas and thus, the nation, without measurable environmental benefits. TCEQ recommends that EPA not finalize the GHG emission standards for light-duty vehicles under the proposed rule. [OAR-2009-0472-7180.1, p.1]

EPA Response:

This rulemaking is on the issues relevant to issuing emissions standards for new motor vehicles under Section 202(a) of the Clean Air Act. The comments are not relevant to the issues and decisions before the Agency in this standard setting rulemaking, as they relate to the separate rulemaking on the endangerment and contribution findings or on other pending or potential rulemakings.

EPA has made a decision on the endangerment and contribution findings, with final Findings published in the Federal Register on December 15, 2009 (74 FR 66496). Comments in that rulemaking were carefully reviewed and considered in that rulemaking and addressed in the associated Response to Comments document, available at: http://www.epa.gov/climatechange/endangerment.html. EPA is not responding to them here as they are not relevant to this rulemaking. See responses to comments above concerning EPA's reasons for issuing the light-duty vehicle rule now instead of delaying issuance of the rule.

Organization: Georgia-Pacific (GP)

Comment:

Since the carbon-neutral motor vehicle emissions of CO2 from biofuels do not contribute to the increase in atmospheric CO2 concentrations which constitute the public

endangerment in EPA's view, EPA lacks a statutory basis for restricting motor vehicle CO2 emissions to the extent that they result from use of biofuels.
[See Docket Number OAR-2009-0472-7122.1, pp.6-9 for detailed comments pertaining to: Biofuel Combustion Is Carbon-Neutral and EPA Must Account for the CO2-Neutrality of Biofuels To Be Consistent With Its Endangerment Finding]

EPA Response:

EPA's authority to adopt emissions standards under section 202(a)(1) is not limited to motor vehicles powered by fuels other than biofuels. Vehicles operating on biofuels do emit GHGs, and as discussed in the preamble, from a lifecycle perspective biofuels such as ethanol are not carbon neutral in the sense the commenter uses.

This is also fully consistent with the endangerment and contribution findings. EPA included all motor vehicles emissions in calculating emissions for purposes of the contribution finding, and did not exclude emissions from vehicles operated by biofuels. In addition, the content or form of the emissions control to follow under section 202(a)(1) was not relevant to the determination that the air pollution of atmospheric concentrations of GHGs endanger public health and welfare. See also Section 5.7.2 of this Response to Comments document.

7.3 Vehicle Life-Cycle Emissions Issues

EPA's proposed GHG emissions standards are tailpipe-based standards, consistent with other EPA vehicle emissions standards. Although EPA did not ask for comment on this issue, we did receive four comments from organizations recommending that EPA not only account for vehicle tailpipe GHG emissions, but also GHG emissions associated with other steps of the vehicle life-cycle. The structure of this section is to provide a sampling of excerpts of these four comments, followed by an EPA response.

Organization: American Iron and Steel Institute
University of Pennsylvania, Environmental Law Project
US Steel Corporation
Washington State Department of Commerce

Comment:

American Iron and Steel Institute

Clearly, the regulation's purpose is to reduce the energy consumption and greenhouse gas emissions (mainly CO2) associated with the combustion of fuel during the driving cycle of light-duty vehicles for the U.S. fleet. AISI is concerned that focusing only on the driving-phase of a vehicle's life will lead to increased energy consumption and CO2 emissions while reducing vehicle affordability. This is because technology selections will be made to lower driving phase energy use and GHG emissions that will increase energy use and GHG emissions in other phases of vehicle life, more than offsetting the driving

phase reductions. A methodology based on Life Cycle Assessment [LCA] of the vehicle [considering all phases of a vehicle's life as opposed to only the driving phase] will ensure energy reduction and GHG reductions occur. [OAR-2009-0472-7088.1, p.2]

1. Life Cycle Assessment (LCA): In order to ensure the steps taken by automakers to comply with the proposed rule result in lower energy use and GHG emissions, it is critically important that energy use and GHG emissions over the full life cycle of the vehicle are considered. Clearly, the reduction in fuel consumption per mile over the driving phase, as the proposed rule stipulates, will directly reduce energy use and GHG emissions for the driving phase of the vehicle's life. However, by ignoring the consequences of the likely steps automakers may use to comply with a driving phase-only rule [such as mass reduction through materials substitution] higher energy use and GHG emissions will result. [OAR-2009-0472-7088.1, p.3]

The proposed rule already considers an expanded view [beyond driving phase emissions] by encouraging the use of air conditioning refrigerants with low global warming potential. AISI recommends the proposed rule include energy use and GHG emissions attributable to vehicle materials and their manufacturing phase. A methodology is described below. [OAR-2009-0472-7088.1, p.3]

An article (Attachment 1) published by American Metal Market in May 2008 by Dr. Roland Geyer of the University of California-Santa Barbara, thoughtfully explains, in general, the concerns about regulations and unintended consequences. He includes examples of an overenthusiastic approach to the regulation of a single phase of a life cycle, while ignoring the full life cycle of the process or product regulated. A diagram showing energy consumption and GHG emissions during the life cycle of a vehicle is shown in Figure 2. The LCA approach is detailed in ISO Standard 14040 Series. Geyer has produced a methodology, endorsed by ISO peer review, through which energy use and CO2 emissions resulting from the selection of materials for vehicles can be evaluated for the entire life cycle of the vehicle. AISI recommends that materials selection for vehicles be evaluated by a model [such as the Geyer model] that considers life-cycle impact on energy use and GHG emissions. Similar studies and public statements about this approach have been made by automakers. For example, recently published information from Mercedes in its S-Class Environmental Certificate (Attachment 2) shows how car makers are using LCA in materials decisions. [OAR-2009-0472-7088.1, p.3] [[Attachment 1 is Docket Number OAR-2009-0472-7088.2 which is copyrighted material and not available on FDMS. Attachment 2 is Docket Number OAR-2009-0472-7088.3.]]

EPA and NHTSA should promulgate regulations that require manufacturers to meet regulations by the lowest life cycle emissions solution, for example by selecting comparatively low energy and low C02 materials like high-strength steel. Materials that lower the overall life-cycle energy use and GHG emissions of the vehicle should be preferred to those that consume more energy and raise the total GHG burden. [OAR-2009-0472-7088.1, p.6]

Methodologies for conducting life cycles assessment of vehicles are well established through exiting tools such as ISO Standard 14040 Series. Vehicle manufacturers already have the in-house capability of conducting LCA for materials selection and there are many published examples where these studies have been applied. Many materials suppliers have established materials energy and CO2 emissions databases. The tools for implementing a life cycle assessment guideline for materials selection are already established and in use by some manufacturers (Attachment 2). [OAR-2009-0472-7088.1, p.6]

AISI strongly recommends the proposed rule incorporate the energy and emissions associated with creating the materials used in building the vehicle and the energy and emissions saved at end of life through recycling. In this way, the reduction in emissions during the driving cycle will not be offset by increases in energy use and GHG emissions associated with use of energy- and GHG intensive materials and the lowest total impact on the environment will be achieved. [OAR-2009-0472-7088.1, p.6]

AISI supports a national standard that can be uniformly applied in order to reduce the consumption of fuel and the emissions associated with light vehicles. However, the current proposal to regulate based only the vehicle driving phase may very well increase energy use and GHG emissions while increasing vehicle cost. Increased vehicle cost would further delay the adoption of compliant vehicles, slowing the reduction in emissions. [OAR-2009-0472-7088.1, p.8]

To avoid these outcomes, we strongly recommend EPA and NHTSA incorporate all life cycle energy use and GHG emissions associated with light-duty vehicles into this rule. A life cycle approach is more consistent with achieving the objectives of the Clean Air Act, the Energy Independence and Security Act (EISA) of 2007, and President Obama's October 5,2009 Executive Order on Federal Leadership in Environmental, Energy, and Economic Performance. [OAR-2009-0472-7088.1, p.9]

University of Pennsylvania, Environmental Law Project

Significantly, the EPA/DOT joint proposed rulemaking also fails to take into account a few potentially major factors because it fails to do a complete life cycle impact assessment. Thus, while the rule would achieve the admirable goal of reducing source emissions of GHGs from motor vehicles in operation, the rule could potentially *increase* overall global GHG emissions. [OAR-2009-0472-7286.1, p. 19]

Automobile manufacturers (and their parts suppliers) may need to build more advanced facilities or convert existing facilities in order to produce the more advanced vehicles that will be required by the proposed rule. This building process will require the extraction and processing of raw and recycled materials into useable building materials, transportation of those building materials to the site of existing or new facilities, and construction. Each of these steps in the renovation or new construction process will be a source of new GHG emissions attributable to the proposed rule. [OAR-2009-0472-7286.1, p. 19]

Aside from the actual physical buildings where parts are manufactured or motor vehicles assembled, the tools required for manufacturing and assembly are likely to become more complex and energy intensive. The manufacture and use of these new tools will require additional GHG outputs. Moreover, vehicles will likely be manufactured of lighter-weight materials in order to meet higher fuel economy requirements; some of these materials may be more energy intensive to produce or recycle, leading to increased GHG emissions in those processes at least indirectly attributable to the proposed rule. [OAR-2009-0472-7286.1, p. 20]

Finally, consumers will be resistant to purchasing new vehicles because of the increased up-front cost, even with a net savings due to reduction in fuel costs, because they may not take the net savings into account or may not value those savings as highly as an upfront cost savings. In any case, in order to reduce up-front costs to consumers of new vehicles, manufacturers (and their suppliers) may increase the proportion of vehicle parts produced and motor vehicles assembled in countries with cheaper labor. Notwithstanding the likely impact on the domestic job market, this will also create a greater need to transport such parts to assembly plants and assembled vehicles to their points-of-sale. This will also result in increased GHG emissions attributable to the proposed rule. [OAR-2009-0472-7286.1, p. 20]

Importantly, this report does not claim to be able to predict the increase in GHG emissions that will be associated with the manufacturing and transportation of the more advanced vehicles that the EPA/DOT joint rule will necessitate. Instead, it aims only to point out that such a complete life cycle analysis should be performed in order to assess the net effect the rule will have on GHG emissions. [OAR-2009-0472-7286.1, p. 20]

US Steel Corporation

Life Cycle Assessment (LCA): It is important to consider the impact of compliance to the proposed aggressive fuel economy regulations on energy and CO2 emissions over the full life cycle of the vehicle. Clearly, the reduction in fuel consumption per mile over the driving phase, as the proposed NPRM would stipulate, will directly reduce energy use and CO2 emissions for the use-phase of the vehicle's life. However, by ignoring the consequences of those probable technologies (one of which is mass reduction through materials selection) to be used by car companies to achieve these results, it is possible for higher-energy and CO2-intensive manufacturing of low density materials to offset the benefit of the regulations imposed on the driving phase alone. [OAR-2009-0472-7197.1, p.3 full discussion follows in document]

[[These comments were submitted as testimony at the Detroit public hearing. See docket number OAR-2009-0472-6185, pp. 102-103.]]

The methodology for a life cycle approach as well as establish an ISO standard 1440, many vehicle manufacturers are already implementing this methodology in vehicle designs. The concern is vehicle makers may select technologies that increase the full life

cycle energy and CO2 footprint of the vehicle in order to comply with the tailpipe-only regulations.

We will continue to invest in steel technologies that reduce the full life cycle energy and the CO2 footprint of the vehicle. Since the 1990s the North American Steel Industry has reduced the energy and carbon intensity of steel by 33 percent, more than doubling the target set by the protocol. Looking to the future, the steel industry is exploring over 100 independent CO technologies to reduce or eliminate carbon emissions associated with steel making. We continue to develop new grades of steel both independently and in partnership with the National Science Foundation and universities that will enable additional lightweighting. And at the end-of-life steel will continue to be the most recycled material on the planet, more than all other materials combined.

The combinations of these investments will reduce the energy and CO2 intensity of the steel supply, reduce the amount of steel needed per vehicle, reduce the tailpipe emissions through weight reduction, and reduce the emissions at the end-of-life through recycling.

However, without the appropriate regulations, these opportunities to reduce the energy use and CO2 emissions associated with a vehicle may not be realized.

The current fuel economy and tailpipe emissions regulations may result in the unintended consequences of increasing the full life cycle energy used and CO2 emissions of the vehicle.

It is my recommendation and request on behalf of U.S. Steel that the EPA and NHTSA develop policies that comprehend the full life cycle environmental impact associated with the vehicle and encourages vehicle manufacturers to choose technologies that result in the lowest environmental impact on the entire vehicle's life.

Washington State Department of Commerce

[Following comments are from LA Testimony, OAR-2009-0472-7283, pp.123-124]

EPA is structuring their regulation -- standards, cost-benefit analysis, et cetera -- on the basis of GHG emitted directly from the vehicle. We urge EPA to explore the areas in the regulation where the use of life-cycle GHG emission would not be prevented by statute.

We believe a life-cycle approach would be particularly important and helpful to provide the right incentives, A, to different vehicle technologies at a given point in time; and, B, to a given vehicle technology over time.

EPA Response:

EPA's final GHG emissions standards are vehicle tailpipe-based standards. The four commenters all suggested that EPA consider accounting for GHG emissions associated with other steps of the vehicle life-cycle. The American Iron and Steel Institute and US

Steel Corporation primarily focus on the GHG emissions impacts associated with producing the materials used in vehicle and component assembly and in materials end-of-life considerations (i.e., recycling or disposal). The University of Pennsylvania, Environmental Law Project goes further and suggests that EPA should consider the GHG emissions impacts of building and operating new, more advanced assembly facilities and tooling, and even the potential GHG emissions impacts that might be associated with a greater reliance on imported vehicles and components, on the theory that technologies with a higher up-front cost might be more likely to be produced in countries with lower labor costs. Each of these three commenters makes the point that these non-tailpipe GHG emissions considerations could reduce the effective GHG savings of the program. The University of Pennsylvania, Environmental Law Project suggests that the non-tailpipe GHG emissions impacts "could potentially *increase* overall global GHG emissions."

EPA understands the technical issues associated with life-cycle analysis. But, vehicle life-cycle GHG emissions impacts are beyond the scope of this rulemaking. EPA has wide discretion under section 202(a) and has chosen to first focus on vehicle tailpipe GHG emissions, both because tailpipe emissions are the largest single source of vehicle life-cycle GHG emissions, and because the EPA motor vehicle program has traditionally focused on tailpipe emissions. The time involved in developing a methodology and the necessary data, noticing all of the information and assessing the public comments would significantly delay issuing GHG standards in time for MY 2012 and perhaps later model years as well, undermining any potential benefits of the approach. In addition, extending the vehicle tailpipe GHG emissions standards to include other steps of the vehicle life-cycle would reduce the harmonization with NHTSA's CAFE program, and EPA has reasonably considered such harmonization to be appropriate in this rulemaking.