Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
January 17, 2003

The Secretary

Phone: 717-787-2814
E-Mail: DavidHess@state.pa.us

Mr. Donald Welsh
Regional Administrator
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Dear Mr. Welsh:

Enclosed for your approval is a revision to the Pennsylvania State Implementation Plan for the Philadelphia Ozone Nonattainment Area which was subject to a public comment period closing January 10, 2003.

The revision revised the area's motor vehicle emissions budgets using the MOVILE6 model. This is done to satisfy EPA's requirement to submit revised budgets within one year of the Notice of Availability of the MOBILE6 highway vehicle emissions model. The Notice was published in the *Federal Register* on January 29, 2002.

Should you have questions regarding this submission, contact Joyce E. Epps, Bureau of Air Quality, at 717-772-9702 or by e-mail at jepps@state.pa.us .

Sincerely,

David E. Hess
Secretary

NOTICES

Proposed Revision to the State Implementation Plan for Ozone for the Philadelphia Ozone Nonattainment Area; Public Hearing

[32 Pa.B. 6002]

Ground-level ozone concentrations above the Federal health-based standard are a serious human health threat and can also cause damage to crops, forests and wildlife. The Department of Environmental Protection (Department) is seeking public comment on a State Implementation Plan (SIP) revision for the Philadelphia ozone nonattainment area (Bucks, Chester, Delaware, Montgomery and Philadelphia Counties).

On October 26, 2001, the Environmental Protection Agency (EPA) approved the Commonwealth's One-Hour Ozone Attainment Demonstration for the Philadelphia area. This approval included a requirement for the Commonwealth to revise the 2005 attainment year motor vehicle transportation conformity emissions budgets using a revised methodology (MOBILE6) to calculate vehicle highway emissions within 1 year after its release (January 29, 2002). The Commonwealth, therefore, must submit its revised budgets for the Philadelphia area to the EPA as a SIP revision by January 29, 2003.

The SIP revision will fulfill the Commonwealth's requirement to revise its existing motor vehicle emissions budgets and, once found adequate by the EPA, will establish a new 2005 motor vehicle emissions budget for the purposes of transportation conformity.

This proposal is available on the Department's website at http://www.dep.state.pa.us (choose Information by Subject/Air Quality/Ozone/Clean Air Plans) or through the following contact person.

The Department will hold a public hearing to receive comments on the SIP revision on January 7, 2003, at 1 p.m. at the Department of Environmental Protection, Southeast Regional Office Hearing Room, Lee Park, 555 North Lane, Suite 6010, Conshohocken, PA.

Persons wishing to present testimony at the hearing should reserve a time by contacting Connie Cross, P. O. Box 8468, Harrisburg, PA 17105, (717) 787-9495. Persons who do not reserve a time will be able to testify after preregistrants. Witnesses should keep testimony to 10 minutes and should also provide two written copies of their testimony at the hearing. Persons with a disability who wish to attend the hearing and require an auxiliary aid, service or other accommodation to participate in the proceeding should contact Wick Havens at the previous telephone number. TDD users may contact the AT&T Relay Service at (800) 654-5984 to discuss how the Department can best accommodate their needs.

Written comments should be sent to Wick Havens, Chief, Division of Air Resource Management, Bureau of Air Quality, P. O. Box 8468, Harrisburg, PA 17105-8468 by

ave to Nawn 12-24-02 **PUBLICATIONS AUTHORIZATION AND INVOICE** 108497

PUBLICATIONS AUTHORIZATION (To be completed by agency):

TO: (NAME AND ADDRESS OF NEWSPAPER)
The Mercury
P.O Box 599
Pottstown, PA 19464
Attn: Legal Ads

FEDERAL I.D. NO./SOC. SEC. NO.: 23-1682129

FROM: (NAME AND ADDRESS OF AGENCY)
Arleen Shulman
DEP, BAQ, Div. of ARM
P.O. Box 8468
Harrisburg, PA 17105-8468

AGENCY TELEPHONE NO.: 717-787-9495

HEREWITH IS ENCLOSED COPY FOR PUBLICATION OF ADVERTISEMENT FOR PROPOSALS TO
☐ EMPLOY ☐ PURCHASE ☐ CONTRACT ☐ SELL

TYPE OF AD: ☐ CLASSIFIED ☒ LEGAL NOTICE

PUBLISH ADVERTISEMENT (NO. OF TIMES)	MAXIMUM NO. OF LINES	DATE	ORDER NO.
Three	2-Col.display ad	November 21, 2002	

DATES OF INSERTION: December 6, 7 and 9th, 2002

SIGNATURE FOR AGENCY: [signature]

You, as vendor, are authorized to publish this advertisement in your newspaper, subject to the terms of this order, as follows: Advertisement to be published in regular advertising columns, no position specified; caption of two lines and signature to be in capitals and subject matter and title of officer to be set solid in type regularly used by your newspaper for public (legal) notice advertising; charge to be made at the rate charged to and paid by commercial advertisers for matter similarly set and occupying similar space; advertisement to be run in the editions specified above. Vendor agrees that, in the performance of any contract awarded to it hereunder, said vendor will not discriminate against any employe or other persons on account of race, color, sex, religious creed, ancestry, age or national origin and that the Commonwealth, upon receipt of satisfactory evidence of such discrimination, shall have the right to cancel said contract. Return this copy at once if you will not accept this advertisement under the terms set forth.

Proof of advertising in the form of a tearsheet must be included on Parts 1, 2 & 3. Return original and two copies (signed by the editor or publisher) to Agency listed above. Part 1 must be notarized. Part 4 is yours.

Commonwealth to be billed only for actual number of printed lines published.

ACCOUNT CODE	FUND	DEPT	APP	YEAR	LDG	ORG	COST FUNCTION		OBJ		AMOUNT
	001	035	161	02	1	2700	06403		335		

INVOICE (To be completed by publisher):

	DATE OF INSERTION	ACTUAL NO OF PRINTED LINES	COST PER LINE	TOTAL AMOUNT
1st Ad	12/6, 7, 9	192 per run 192 x 3 = 576 + tl.	$1.16 per	668 16
2nd Ad			proof of pub	9 00
3rd Ad				
			GRAND TOTAL →	677 16

PROPOSED REVISION TO THE STATE IMPLEMENTATION PLAN FOR OZONE FOR THE PHILADELPHIA OZONE NONATTAINMENT AREA

Public Hearing

Ground-level ozone concentrations above the federal health-based standard are a serious human health threat and can also cause damage to crops, forests and wildlife. The Department of Environmental Protection is seeking public comment on a state implementation plan (SIP) revision for the Philadelphia ozone nonattainment area (Bucks, Chester, Delaware, Montgomery and Philadelphia counties).

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Persons wishing to present testimony at the hearing should contact Connie Cross, 717-787-9495 (P.O. Box 8468, Harrisburg, PA 17105) to reserve a time. If you do not reserve a time, you will able to testify after pre-registrants. Witnesses

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Classified Manager
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mercial advertiser for a similar amount of matter occupying similar space

2002

Mary Ann Edleman
SIGNATURE OF AFFIANT

Notary Public
Pottstown Borough, Montgomery County
My Commission Expires Feb 1, 2005
Member, Pennsylvania Association of Notaries

gent of the owner or publisher.

URY

Sent to Dwor 12-24-02

REV. 12-88

PUBLICATIONS AUTHORIZATION AND INVOICE

INVOICE NO. 109496

PUBLICATIONS AUTHORIZATION (To be completed by agency):

TO: (NAME AND ADDRESS OF NEWSPAPER)
Delaware County Daily Times
500 Mildred Avenue
Primos, PA 19018
Attn: Legal Ads

FEDERAL I.D. NO./SOC. SEC. NO.
~~XXXXXXXXX~~ 13-3405136
13-3372437

FROM: (NAME AND ADDRESS OF AGENCY)
Arleen Shulman
DEP, BAQ, Div. of ARM
Harrisburg, PA 17105-8468

AGENCY TELEPHONE NO.
717-787-9495

HEREWITH IS ENCLOSED COPY FOR PUBLICATION OF ADVERTISEMENT FOR PROPOSALS TO
☐ EMPLOY ☐ PURCHASE ☐ CONTRACT ☐ SELL

TYPE OF AD
☐ CLASSIFIED ☒ LEGAL NOTICE

PUBLISH ADVERTISEMENT (NO. OF TIMES): Three

MAXIMUM NO. OF LINES: 2 Col. display ad

DATE: November 21, 2002

ORDER NO.

DATES OF INSERTION: December 6, 7 and 9th

SIGNATURE FOR AGENCY: [signature]

You, as vendor, are authorized to publish this advertisement in your newspaper, subject to the terms of this order, as follows: Advertisement to be published in regular advertising columns, no position specified; caption of two lines and signature to be in capitals and subject matter and title of officer to be set solid in type regularly used by your newspaper for public (legal) notice advertising; charge to be made at the rate charged to and paid by commercial advertisers for matter similarly set and occupying similar space; advertisement to be run in the editions specified above. Vendor agrees that, in the performance of any contract awarded to it hereunder, said vendor will not discriminate against any employe or other persons on account of race, color, sex, religious creed, ancestry, age or national origin and that the Commonwealth, upon receipt of satisfactory evidence of such discrimination, shall have the right to cancel said contract. Return this copy at once if you will not accept this advertisement under the terms set forth.

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Commonwealth to be billed only for actual number of printed lines published.

ACCOUNT CODE	FUND	DEPT	APP	YEAR	LDG	ORG	COST FUNCTION	OBJ	AMOUNT
	001	035	161	02	1	2700	06403	335	

INVOICE (To be completed by publisher):

	DATE OF INSERTION	ACTUAL NO OF PRINTED LINES	COST PER LINE	TOTAL AMOUNT
1st Ad	12/6/02	124	2.24	277. 76
2nd Ad	12/7/02	124	2.24	277 76
3rd Ad	12/9/02	124	2.24	277 76
			Proof Chg	5 50
			TOTAL →	838. 58

Commonwealth of Pennsylvania
unty of Delaware

Before me, the subscriber, a Notary Pu
o being duly sworn, doth depose and say th
Delaware County Daily T
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l set in a similar manner, in said newspaper.

Sworn and subscribed before me this
of December

NOTARY PUBLIC

My commission expires

s affidavit must be made by the Owner, Publisher or the

PROPOSED REVISION TO THE STATE IMPLEMENTATION PLAN FOR OZONE FOR THE PHILADELPHIA OZONE NONATTAINMENT AREA
Public Hearing

Ground-level ozone concentrations above the federal health-based standard are a serious human health threat an can also cause damage to crops, forests and wildlife. The Department of Environmental Protection is seeking public comment on a state implementation plan (SIP) revision for the Philadelphia ozone nonattainment area (Bucks, Chester, Delaware, Montgomery and Philadelphia counties).

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The Department will hold a public hearing to receive comments on the SIP revision on Tuesday, January 7 at 1 p.m. at the Pennsylvania Department of Environmental Protection, Southeast Regional Office Hearing Room, Lee Park, 555 North Lane, Suite 6010, Conshohocken, PA

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Carol Sandone
Clerk
0 Mildred Ave PrimosPA

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that the Commonwealth is not charged
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SIGNATURE OF AFFIANT

COMMONWEALTH OF PENNSYLVANIA
STD—521 REV. 12-88

Sent to Comptrollers 12-12-02

PUBLICATIONS AUTHORIZATION AND INVOICE

INVOICE NO. 109493

PUBLICATIONS AUTHORIZATION (To be completed by agency):

TO: (NAME AND ADDRESS OF NEWSPAPER)
Philadelphia Inquirer
P.O. Box 8527
Philadelphia, PA 19101
Attn: Legal Ads

FEDERAL I.D. NO./SOC. SEC. NO: 23-1717558

FROM: (NAME AND ADDRESS OF AGENCY)
Arleen Shulman
DEP, BAQ, Div. of ARM
P.O. Box 8468
Harrisburg, PA 17105-8468

AGENCY TELEPHONE NO.: 717-787-9495

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Commonwealth to be billed only for actua[illegible]

ACCOUNT CODE	FUND	DEPT	APP	YEAR	OBJ	AMOUNT
	001	035	161	02	335	

INVOICE (To be completed by publisher):

	DATE OF INSERTION	[illegible]ST PER LINE	TOTAL AMOUNT
1st Ad	December 6 200[illegible]	[illegible]13.67	8207.84
2nd Ad	December 7, 2002	[illegible]13.67	2077.84
3rd Ad	December 9 200[illegible]	[illegible]13.67	2077.84
		[illegible]ND TOTAL →	$6233.52

[illegible]ct #061413203 (Tel. #[illegible]

Commonwealth of Pennsylvania
County of Philadelphia

Before me, the subscriber, a Notary Public [illegible] me Anna Dickerson
who being duly sworn, doth depose and say that h[illegible] [illegible]p 400 N. Broad St
the Philadelphia Inquirer [illegible]gular advertising columns of said newspaper,
that the advertisement, of which tearsheet is atta[illegible] and that the Commonwealth is not charged
n the editions of said newspaper, in all respec[illegible] [illegible]ilar amount of matter occupying similar space
herefor at a rate higher than is charged any ordi[illegible]
and set in a similar manner, in said newspaper.

Sworn and subscribed before me this [illegible]
day of December

Margaret C. Ruchalski
NOTARY PUBLIC

[illegible] Dickerson
SIGNATURE OF AFFIANT

My commission expires May 27 2006

This affidavit must be made by the owner, publisher, or the designated agent of the owner or publisher.

NOTARIAL SEAL
MARGARET C. RUCHALSKI Notary Public
City of Philadelphia, Phila. County

PROPOSED REVISION TO THE STATE IMPLEMENTATION PLAN FOR OZONE FOR THE PHILADELPHIA OZONE NONATTAINMENT AREA

Public Hearing

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The SIP revision will fulfill Pennsylvania's requirement to revise its existing motor vehicle emissions budgets and, once found adequate by EPA, will establish a new 2005 motor vehicle emissions budget for the purposes of transportation conformity.

This proposal is available on the DEP Website at http://www.dep.state.pa.us (choose Information by Subject/Air Quality/Ozone/Clean Air Plans), or through the contact person(s) listed below.

The Department will hold a public hearing to receive comments on the SIP revision on Tuesday, January 7 at 1 p.m. at the Pennsylvania Department of Environmental Protection, Southeast Regional Office Hearing Room, Lee Park, 555 North Lane, Suite 6010, Conshohocken, PA.

Persons wishing to present testimony at the hearing should contact Connie Cross, 717-787-9495 (P.O. Box 8468, Harrisburg, PA 17105) to reserve a time. If you do not reserve a time, you will be able to testify after pre-registrants. Witnesses should keep testimony to 10 minutes and should also provide two written copies of their testimony at the hearing. Persons with a disability who wish to attend the hearing and require an auxiliary aid, service or other accommodation to participate in the proceeding should contact Wick Havens at the telephone above. TDD users may contact the AT&T Relay Service at 800-654-5984 to discuss how the Department can best accommodate their needs.

Written comments should be sent to Wick Havens, Chief, Division of Air Resource Management, Bureau of Air Quality, P.O. Box 8468, Harrisburg, PA 17105-8468 no later than close of business on January 10, 2003.

Responses to Public Comment for PA's State Implementation Plan (SIP) Revision For the Philadelphia Ozone Nonattainment Area; Revised Highway Vehicle Emissions Budgets

1. Robert Kramer
   Acting Chief, Air Quality Planning and Information Services Branch
   US Environmental Protection Agency Region III
   1650 Arch Street
   Philadelphia, PA 19103-2029

Comment (1): EPA indicated that they would not be able to find the motor vehicle emissions budgets adequate unless the SIP revision contains a demonstration showing that the budgets are consistent with the attainment demonstration in accordance with the guidance that EPA issued on January 18, 2002 called "Policy Guidance of the Use of MOBILE6 for SIP Development and Transportation Conformity".

Response: In accordance with the policy guidance memorandum, Pennsylvania has provided more detailed data and explanation on the original attainment demonstration and how the MOBILE6 budgets do not adversely affect that demonstration. This discussion is included in Appendix A: Discussion of MOBILE6 and its Effect on Pennsylvania's Attainment Demonstration for the Philadelphia Ozone Severe Nonattainment Area.

Commonwealth of Pennsylvania
Department of Environmental Protection

State Implementation Plan (SIP) Revision For the Philadelphia Ozone Nonattainment Area

Revised Highway Vehicle Emissions Budgets

January 2003

Division of Air Resource Management
Bureau of Air Quality
Pennsylvania Department of Environmental Protection
PO Box 8468
Harrisburg, PA 17105-8468
717-787-9495
J. Wick Havens, Chief

www.dep.state.pa.us

What Is Ozone?

Ozone levels above the health-based standard (National Ambient Air Quality Standards) are a serious human health threat, and also can cause damage to important food crops, forests, and wildlife. Ozone in the troposphere, also called ground-level ozone, should not be confused with stratospheric ozone – located in the upper atmosphere – which protects the earth by blocking out damaging solar radiation.

Ozone is not emitted directly to the atmosphere, but is formed by photochemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) in the presence of sunlight. The long, hot, humid days of summer are particularly conducive to ozone formation, so ozone levels are of general concern during the months of May through September.
The primary sources of man-made VOCs and NO_x, the ozone precursors, are the evaporation of fuels and solvents (gasoline and consumer products), combustion of fuels (motor vehicles, power plants, and other industries), and chemical and industrial processes. The Philadelphia Metropolitan area still exceeds the one-hour health-based standard for ozone during the summer.

Why Are We Proposing This State Implementation Plan (SIP) Revision?

Pennsylvania is responsible for developing revisions to the state implementation plan (SIP) for air quality for the five Pennsylvania counties of the Philadelphia interstate ozone nonattainment area -- Bucks, Chester, Delaware, Montgomery and Philadelphia counties. Pennsylvania submitted its required post-1996 rate-of-progress and attainment plans to the U.S. Environmental Protection Agency (EPA) in several documents from 1998 through 2001.

Sections 110 and 181 of the Clean Air Act Amendments (CAAA), 42 U.SC §§ 7410 and 7511, require Pennsylvania to demonstrate that the area will attain the one-hour National Ambient Air Quality Standard for ozone by 2005. On October 26, 2001, the EPA approved Pennsylvania's One-Hour Ozone Attainment Demonstration for the Philadelphia area [66 FR 54143]. This approval included the EPA's requirement for Pennsylvania to revise the 2005 attainment year motor vehicle emissions budgets using the MOBILE6 vehicle highway emissions model within one year after the release of MOBILE6. If Pennsylvania were to fail to submit the revised budgets, EPA could make a finding of failure to implement the SIP, which could start a sanctions clock under section 179 of the Clean Air Act. 42 U.S.C. § 7509.

On January 29, 2002, EPA published the Notice of Availability of the MOBILE6 motor vehicle emissions factor model in the Federal Register [67 FR 4254]. That notice started the time periods for incorporating MOBILE6 into SIPs and conformity determinations. Pennsylvania has until January 29, 2003 to submit its revised budgets for the Philadelphia area using the MOBILE6 model. This submission serves to fulfill Pennsylvania's requirement to revise its existing motor vehicle emissions budgets using that model.

Section 176 (c) of the CAAA, 42 U.S.C. § 7506(c), provides a mechanism by which federally funded or approved highway and transit plans, programs and projects are determined not to

produce new air quality violations, worsen existing violations or delay timely attainment of national air quality standards. EPA regulations issued under section 176(c) of the CAAA to implement "transportation conformity" provide that motor vehicle emission "budgets" cannot be exceeded by emissions produced by the planned transportation system. The motor vehicle budget represents the highway-generated portion of Pennsylvania's total emissions for an area from on-road mobile sources. Transportation agencies in Pennsylvania are responsible for making timely transportation conformity determinations. The Delaware Valley Regional Planning Commission holds that responsibility for the Philadelphia area. The Federal Highway Administration approves these determinations after EPA concurs.

A public comment period for this revision began on December 7, 2002 via an announcement in the *Pennsylvania Bulletin* with additional notice given through major newspapers in the Philadelphia region. A public hearing was convened on January 7, 2003 at 1:00 PM in the Hearing Room at the Department's Southeast Regional Office in Conshohocken, PA. All public comment received by the Department for this revision is addressed in the Comment and Response document. The public comment period was closed at 4:00 PM on January 10, 2003.

Motor Vehicle Emission Budgets for Transportation Conformity

The MOBILE6 model represents the most recent version of the MOBILE series of on-road vehicle highway emissions models. It calculates emissions factors for 28 individual vehicle types and estimates emissions depending on various conditions, such as ambient temperatures, travel speeds, operating modes, fuel volatility, and mileage accrual rates. Each new version of MOBILE reflects the collection and analysis of new test data. It also incorporates changes in vehicle, engine, and emission control system technologies; and improved understanding of in-use emissions levels and the factors that influence them. MOBILE6 incorporates updated information on basic emission rates, more realistic driving patterns, separation of starting and running emissions, improved correction factors, and changing fleet composition. It also includes impacts of new regulations promulgated since the release of the previous version of MOBILE (MOBILE5b).

In addition to the availability of MOBILE6, more recent vehicle fleet information has become available since the submission of Pennsylvania's original motor vehicle emissions budgets. EPA guidance requires MOBILE model emissions estimates to be based on the latest planning assumptions. For this reason, Pennsylvania is using the following updated data inputs:

- Vehicle mixes based on 1999 PA Department of Transportation (PENNDOT) truck percentages and MOBILE6 defaults for 2005,
- Vehicle age distributions recalculated using MOBILE6 vehicle type definitions,
- Daily minimum/maximum temperatures and humidity,
- Growth rates,
- 1999 traffic data and information, including hourly patterns, seasonal adjustments and VMT (Vehicle Miles Traveled).

Following the initial publication of the proposed revision and the opening of the public comment period, DEP became aware that the modeling contained in the proposal did not account for changes in emissions resulting from Pennsylvania's adoption of the federal National Low Emissions Vehicle (NLEV) program. The revised modeling and budgets are reflected in this revision and account for only minor changes from the originally proposed budgets.

Table 1 summarizes the 2005 vehicle highway emissions budgets for the Philadelphia Ozone Non-Attainment area:

TABLE 1 – Proposed 2005 VOC and NOx Budgets with VMT

POLLUTANT	1990 Baseline (MOBILE5)	1990 Baseline (MOBILE6)	Existing 2005 Budget (MOBILE5)	Revised 2005 Budget (MOBILE6)
VOC				
Kg/summer day	170,459	217,678	54,595	72,293
Tons/summer day	187.90	239.95	60.18	79.69
NOx				
Kg/summer day	143,634	229,453	70,272	131,296
Tons/summer day	158.33	252.93	77.46	144.73
VMT (Vehicle Miles Traveled)	64,602,389	64,608,006*	79,712,326	79,270,129

* Small differences in the recalculated VMT result from rounding when individual link VMTs are accumulated.

The improvements in the MOBILE6 data, calculation methods, and the use of current fleet and highway network data have led to improved estimates of highway vehicle emissions. The updated MOBILE6 emissions estimates, and the subsequent proposed budgets, are different from the emissions that were estimated for the previous budgets calculated with MOBILE5.

There are a number of reasons why MOBILE5 and MOBILE6 emission estimates differ. Depending on the year modeled, some changes drive the estimates down; others drive the estimates up. There is a tendency for MOBILE6 emission estimates to be higher in early years and lower in later years. Many of these effects are explained in detail in Appendix A, "An Explanation of Methodology", pages 1 through 3. Minor differences between 2005 VMT estimations are due to the use of the latest growth rate assumptions provided by PENNDOT.

The following information is available in the Appendices to document calculation of the highway vehicle emissions inventories and the transportation conformity budgets:

Appendix A - Discussion of MOBILE6 and its Effect on Pennsylvania's Attainment Demonstration for the Philadelphia Ozone Severe Nonattainment Area
Appendix B - An Explanation of Methodology – MOBILE6
Appendix C - Summary of VMT, VOC and NOx Inventories and Forecasts by County
Appendix D – MOBILE6 Modeling parameters

Appendix E - VMT, VOC, CO and NOx Inventory and Forecast; Emissions by County by Functional Class

Appendix F - VMT, VOC, CO and NOx inventory and forecast; Emissions by County by Vehicle Type

Appendix G - MOBILE6 Input Files for 1990 Baseline and 2005 Scenario

Appendix A

Discussion of MOBILE6 and its Effect on Pennsylvania's Attainment Demonstration for the Philadelphia Ozone Severe Nonattainment Area

APPENDIX A
Discussion of MOBILE6 and its Effect on Pennsylvania's Attainment Demonstration for the Philadelphia Ozone Severe Nonattainment Area

On October 26, 2001, the U.S. Environmental Protection Agency (EPA) approved Pennsylvania's attainment demonstration for the Philadelphia Ozone Severe Nonattainment Area. Since this demonstration employed interim calculations of benefits of the Federal Tier 2 program using MOBILE5, EPA required Pennsylvania to submit, within one year of the release of the MOBILE6 model, revised budgets using MOBILE6. On January 18, 2002, EPA's Office of Air, Quality Planning and Standards (OAQPS) and the Office of Transportation and Air Quality (OTAQ) released its *Final Policy Guidance on the Use of MOBILE6 for SIP Development and Transportation Conformity.* This guidance emphasized that whenever mobile vehicle emissions inventories and budgets in a State Implementation Plan (SIP) for attainment are revised, the SIP must continue to demonstrate its Clean Air Act purpose. The guidance also states, "SIP revisions that revise MOBILE5 Tier 2 estimates with MOBILE6 are not intended to duplicate any technical analysis required for mid-course review in those areas". Section 5 of the policy guidance further outlines that states must not only update to the latest planning assumptions with regard to VMT, speeds, fleet mix and control measures, but must also "consider whether growth and control strategy assumptions for non-motor vehicle sources (i.e., point, area and non-road mobile sources) are still accurate at the time the MOBILE6 SIP revision is developed". The state should also be able to show that any minor changes in the growth and control strategy assumptions do not change the overall conclusions of the SIP.

Tables 1a and 1b outline Pennsylvania's 1990 and 2005 (projected) inventories comparing NOx and VOC emissions and the percent reductions estimated between those years. The tables also compare total percent reductions associated with MOBILE5 and MOBILE6. The table shows that while there have been more overall reductions of VOC when MOBILE6 is used, there is a slight increase in NOx.

Table 1a: Total VOC Inventory comparing MOBILE5 and MOBILE6

	Source Type	1990 (TPD)	2005 (TPD)	% Reduction	? % Reduction	? Tons
VOC	Point	153	139			
	Area	194	156			
	Nonroad	81	68			
	MOBILE5	187.9	60.18			
	Total	615.9	423.18	**31.29%**		
VOC	Point	153	139			
	Area	194	156			
	Nonroad	81	68			
	MOBILE6	239.95	79.69			
	Total	667.95	442.69	**33.72%**	**2.43%**	**-16.23**

Table 1b: Total NOx Inventory comparing MOBILE5 and MOBILE6

	Source Type	1990 (TPD)	2005 (TPD)	% Reduction	? % Reduction	? Tons
NOx	Point	162	146			
	Area	47	47			
	Nonroad	72	31			
	MOBILE5	158.33	77.46			
	Total	439.33	301.46	**31.38%**		
NOx	Point	162	146			
	Area	47	47			
	Nonroad	72	31			
	MOBILE6	252.93	144.73			
	Total	533.93	368.73	**30.94%**	**-0.44%**	**2.34**

The additional VOC reduction benefit of more than 16 tons offsets the small 2.3 ton increase in NOx. This is further supported by an October 15, 2002 letter from EPA Region III approving Pennsylvania's use of a 1.3 to1 VOC to NOx substitution ratio for the purposes of New Source Review emissions trading within the Philadelphia Ozone Severe Nonattainment Area.

With regard to growth assumptions, Pennsylvania's SIP for the Philadelphia area projected non-motor vehicle emissions (i.e., non-road mobile, area and point) into future years by using growth in population and employment as growth factors. Three of the nine non-road source categories, which include lawn and garden equipment and recreational marine engines (two of the largest sources of VOCs of the nonroad categories) used population growth as a growth factor. In the Philadelphia area SIP, Pennsylvania's population was projected to increase 5.2% from 1990 to 2005. According to the U.S. Census Bureau data from the 1990 Census and population projections to 2005, Pennsylvania's population will only increase 3.3% in that time frame. In addition, the largest NOx emitting categories like construction, farm, and industrial equipment, which use changes in employment as a growth factor, showed employment, according to the latest statistics from the Bureau of Labor Statistics, equal to or below predicted estimates for 2005 in the attainment demonstration. All three categories presently have a downward trend in employment. If current estimates were used for 2005, the net result would be lower emissions in 2005. Results are similar for area sources where most growth factors are population-based. A review of the point source emission inventory shows that 2001 emissions are significantly below the 2005 SIP levels. Again, Pennsylvania's employment and population growth rates are equal to or below predicted estimates.

Therefore, Pennsylvania's review of the SIP emissions inventory, in accordance with the January 18, 2002 EPA Policy Guidance, shows that the Commonwealth's SIP for the Philadelphia area continues to fulfill its Clean Air Act purpose with the updated assumptions and that the revised highway vehicle emissions budgets using MOBILE6 do not compromise the overall integrity of the SIP.

Appendix B

An Explanation of Methodology – MOBILE6

The Philadelphia 5-County Area

State Implementation Plan Revision Using MOBILE6

An Explanation of Methodology

Prepared for:

Mobile Sources Section, Bureau of Air Quality
Pennsylvania Department of Environmental Protection
PO Box 8468
Harrisburg, PA 17105-8468

Prepared by:

Michael Baker, Jr., Inc.

November 2002

The Philadelphia 5-County Area
State Implementation Plan Revision Using MOBILE6
An Explanation of Methodology
November 2002

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PHILADELPHIA 5-COUNTY SIP REVISION OVERVIEW

This SIP Revision for the Philadelphia 5-County Area reflects the highway mobile sources emission estimations for 2005 using EPA's recently approved MOBILE6 emission model that will revise the interim MOBILE5-based (Tier 2) motor vehicle emissions budget. The latest version of MOBILE is a major revision based on new test data and accounts for changes in vehicle technology and regulations. In addition, the model includes an improved understanding of in-use emission levels and the factors that influence them resulting in significantly more detailed input data.

As compared to previous MOBILE versions, MOBILE6 has a significant impact on the emission factors, benefits of available control strategies, effects of new regulations and corrections to basic emission rates. As a result, the emissions rates are different and it is difficult to compare the results directly to previous runs conducted with MOBILE5. For this reason, 1990 emission totals are reanalyzed using MOBILE6 and its available input parameters.

Guidance documents from EPA were used to develop the inventory for the Philadelphia 5-county area. They include:

- ?? *Policy Guidance on the Use of MOBILE6 for SIP Development ad Transportation Conformity*, US EPA Office of Air and Radiation, dated January 18, 2002.
- ?? *Technical Guidance on the Use of MOBILE6 for Emission Inventory Preparation*, US EPA Office of Air and Radiation, and Office of Transportation and Air Quality, dated January 2002.
- ?? *User's Guide to MOBILE6.0, Mobile Source Emission Factor Model*, EPA420-R-02-001, dated January 2002.

The methodologies used to produce the MOBILE6 emission results conform to the recommendations provided in EPA's Technical Guidance. A mix of local data and national default input data (internal to MOBILE6) has been used for this submission. Local data has been used for the primary data items that have a significant impact on emissions. This includes VMT, speeds, vehicle mixes, age distributions, diesel sales fractions, hourly distributions, temperatures/humidity, and Inspection/Maintenance and fuel program characteristics.

Some of the planning assumptions and modeling tools have been updated for this inventory effort. The key elements to the modeling protocol which have been updated are outlined below:

PPSUITE Post Processor

PPSUITE represents an enhanced version of the Post Processor for Air Quality (PPAQ) software system that has been used for previous inventory and conformity submissions for Pennsylvania. The software has gone through a significant revision to ensure consistency with the MOBILE6 emissions model. PPSUITE plays a key role in the development of roadway speed estimates, which are supplied as input to the MOBILE6 model. The software is also used to prepare the MOBILE6 input shell and to process the MOBILE6 outputs.

Philadelphia 5-County Area – OBDII and PA97 with ASM I/M Program

All five counties (Bucks, Chester, Delaware, Montgomery and Philadelphia) are included in the I/M program that inspects the emissions for light duty passenger cars and light duty trucks (<9,000#). This modeling makes the following assumptions about I/M:

?? An OBDII computer check for 1996 and newer model year vehicles along with the gas cap pressure check, which is applied to all model years (1975 to present).

?? Model years 1981 to 1995 receive the ASM 5015 program with final cutpoints and 1975 to 1980 model years receive the idle test. The anti-tampering program that includes seven inspections applies to model years 1975 to 1995.

Fuels Program

The Philadelphia 5-county area is required to have federal reformulated gasoline (RFG). Like conventional gasoline, RFG must meet fuel volatility requirements that vary by geographic region. The Philadelphia area was modeled using the RFG requirements for summer time and in the "North."

Vehicle Age/Diesel Sales Distributions

Vehicle age distributions are input to MOBILE for each county based on registered vehicles that reflect July 1 summer conditions. These distributions reflect the percentage of vehicles in the fleet up to 25 years old and are listed by the 16 MOBILE6 vehicle types. Updated 1999 vehicle age distributions have been acquired by the 16 MOBILE6 vehicle types for this inventory submission from the PENNDOT Bureau of Motor Vehicles Registration Database. Due to insufficient data, only data for light-duty vehicles was used as local inputs. The heavy-duty vehicles used the internal MOBILE6 defaults.
The analysis also utilizes light duty diesel sales fraction data that was also acquired from PENNDOT by the 16 MOBILE6 vehicle classes.

Vehicle Mix Patterns

Vehicle mix patterns are calculated for each county, functional class utilizing a combination of PENNDOT truck percentages and MOBILE6 default distributions. The calculation of the pattern files is described in the technical documentation that follows.

Weather Data

Official weather information was obtained from the National Climatic Data Center to calculate the minimum and maximum temperatures, ambient temperature, absolute humidity, cloud cover, sunrise and sunset data. The weather data is based on the 10 days between 1999 and 2001 with the 10 highest ozone concentrations over a three-year period.

Federal Program: Low Emission Vehicle (NLEV), Tier 2/Low Sulfur Fuel, and 2004 Heavy Duty Engine (HDE) Rule

Federal new vehicle emissions control and fuel programs that were modeled separately using MOBILE5 are now incorporated into MOBILE6. The NLEV program became effective in 1999. The Tier 2 / Low Sulfur Fuel Program takes effect in 2004 and provides benefit for subsequent years. The HDE rule does not take full effect until 2004, but some manufacturers of heavy-duty engines were required to implement in 2002 thus providing early reduction benefits. Therefore, these new federal vehicle emissions control and fuel programs are included in the 2005 control strategy scenario for the Philadelphia area.

Other Changes incorporated into MOBILE6

In addition to the new regulations, a number of improvements (corrections) were incorporated into MOBILE6 that have a significant impact on emission calculations, in particular NOx emissions. These changes may increase or decrease emissions depending on the pollutant, calendar year, fuel program and locally specified speeds and facility class driving activities. As a result, a MOBILE6 comparison to MOBILE5 emission estimates will be significantly different.

Below is a list of the most important quantitative changes to emissions incorporated into MOBILE6:

?? Basic Emission Rates (BER) for light-duty cars and trucks are lower from late 1980s and early 1990 model year vehicles due to new data that shows pollution control devices are more durable than expected. This change generally lowers emissions from vehicles of model years in the late 1980's and early 1990's.

?? Real world driving factors that influence emissions like air conditioning and high acceleration effects.

?? Fuel content corrections to account for damage inflicted by high levels of sulfur in gasoline in vehicles with advanced catalysts. This leads to increased emissions in the late 1990s and early 2000s. This effect declines as the Tier 2 regulations phase in lower sulfur fuel.

?? Speed data shows that vehicle emissions are generally less sensitive to speed changes than previously thought. This has a variable effect on emissions.

?? For heavy-duty trucks, MOBILE6 includes lower base-rate emissions, but excess NOx emissions under steady state driving conditions can occur due to pollution control defeat devices included in these vehicles in the 1990's. MOBILE6 includes, though, a reduction in these NOx emissions expected in future years as the result of a consent decree with engine manufacturers. Thus, MOBILE6 heavy-duty truck emissions are significantly higher than MOBILE5 for some model years and pollutants and significantly lower for others.

?? Heavy-duty diesel vehicle NOx off-cycle emissions effects are incorporated into MOBILE6. These effects include the Defeat Device, NOx Pull Ahead, Rebuild Mitigation Program, and Rebuild program effectiveness.

?? MOBILE6 includes new data for evaporative emissions because this data has indicated a small fraction of older vehicles with leaks in their fuel systems contribute a large quantity of evaporative emissions. MOBILE6 also accounts for the new tests and new regulations that require lower emissions and more durable fuel systems. This has a variable effect on emissions.

INTRODUCTION

The purpose of this document is to explain how Pennsylvania estimates emissions from highway vehicles for inclusion in its emission inventories and State Implementation Plans.

Overview of Emissions Inventories

Under the Clean Air Act Amendments of 1990, Pennsylvania is required to develop emission inventories for ozone precursors -- volatile organic compounds (VOC) and nitrogen oxides (NOx). A baseline 1990 inventory was required statewide. The five-county Philadelphia area, designated as an ozone nonattainment area, is also required to achieve US EPA specified minimum percentage reductions in VOC. As a result, a projected inventory both with and without anticipated control strategies has been prepared for the 2005 attainment year. In addition, the 1990 base year has been recalculated using the most recent emission models and updated estimation methods.

Pennsylvania's inventories generally categorize emissions into four categories:

?? highway vehicles
?? stationary sources (major industrial, commercial and utility sources)
?? area sources (smaller industrial/commercial sources, consumer products)
?? nonroad mobile sources (including construction and agricultural equipment, lawn and garden equipment)

Of all of the sources of air pollution, only the emissions of some stationary sources are measured directly and continuously through instrumentation. Emissions from all other sources must be estimated in some fashion, including those from highway vehicles. In their very simplest form, estimates of emissions follow the following pattern:

Emission rate x activity level = emissions per time period (usually day or year)

Most emission rates have been developed by EPA, in cooperation with industry and states, over many years and are compiled and documented in a reference volume, Compilation of Air Pollution Emission Factors (AP-42).

For example, the annual VOC emissions from residential fuel oil heating could be estimated by:

AP-42 emission rate	*X*	*activity level* =	*emissions*
0.713 pounds/gallon	*X*	# dwelling units *x* % using oil *x* # gallons per unit	# pounds of VOC per year

Adding up the products of the emission rates and activity levels for all sources of a given pollutant constitutes the emission inventory for that pollutant.

Highway Vehicle Emission Inventories

Highway vehicles contribute significantly to air pollution, particularly to ground-level ozone, which is the most persistent air pollutant in Pennsylvania. Ozone is not created directly but formed in sunlight from VOCs and NOx. Both VOCs and NOx are emitted from highway vehicles. Pennsylvania's ozone-related emission inventory efforts have been focused on these pollutants.

Obviously, direct measurement of emission levels from all vehicles in use is impossible. In comparison to highway vehicles, estimating residential heating emissions is a fairly simple calculation because there is a constant emission rate and a fairly simple measure of activity. For highway vehicles, however, estimating the emission rate and activity levels of all vehicles on the road during a typical summer day is a complicated endeavor.

If every vehicle emitted the same amount of pollution all the time, one could simply multiply those emission standards (emission rate in grams of pollution per mile) times the number of miles driven (activity level) to estimate total emissions. But, the fact is that emission rates from all vehicles vary over the entire range of conditions under which they operate. These variables include air temperature, speed, traffic conditions, operating mode (started cold? started warm? running already warmed up?) and fuel. The inventory must also account for non-exhaust or evaporative emissions. In addition, the fleet is composed of several generations, types of vehicles and their emission control technologies, each of which performs differently. This requires that the composition of the fleet (vehicle ages and types) must also be included in the estimation algorithm.

In order to estimate both the rate at which emissions are being generated and to calculate vehicle miles traveled (activity level), Pennsylvania examines its road network and fleet to estimate vehicle activity. For ozone-related inventories, this is done for a typical summer (July) weekday. Not only must this be done for a baseline year, but it must also be projected into the future. This process involves a large quantity of data and is extremely complex.

Computer models have been developed to perform these calculations by simulating the travel of vehicles on the Commonwealth's roadway system. These models then generate emission rates (also called emission factors) for different vehicle types for area-specific conditions and then combine them in summary form. The "area-specific conditions" include vehicle and highway data, plus control measure characteristics and future year projections of all variables.

MOBILE. The heart of the highway vehicle emission calculation procedure is EPA's highway vehicle emission factor model, MOBILE. This is a FORTRAN program that calculates **average** in-use fleet emission factors for ozone precursors for each of twenty-eight categories of vehicles under various conditions affecting in-use emission levels (e.g., ambient temperatures, average traffic speeds, gasoline volatility) as specified by the model user. MOBILE produces the "emission rates" referred to in the previous section.

The model was first developed as MOBILE1 in the late 1970s, and has been periodically updated to reflect the collection and analysis of additional emission factor data over the years, as well as changes in vehicle, engine and emission control system technologies, changes in applicable regulations, emission

standards and test procedures, and improved understanding of in-use emission levels and the factors that influence them. For this inventory effort, Pennsylvania utilizes MOBILE6 as approved by EPA.

PPSUITE. Pennsylvania also uses a post processor named PPSUITE (formerly named PPAQ - Post Processor for Air Quality), which consists of a set of programs that perform the following functions:

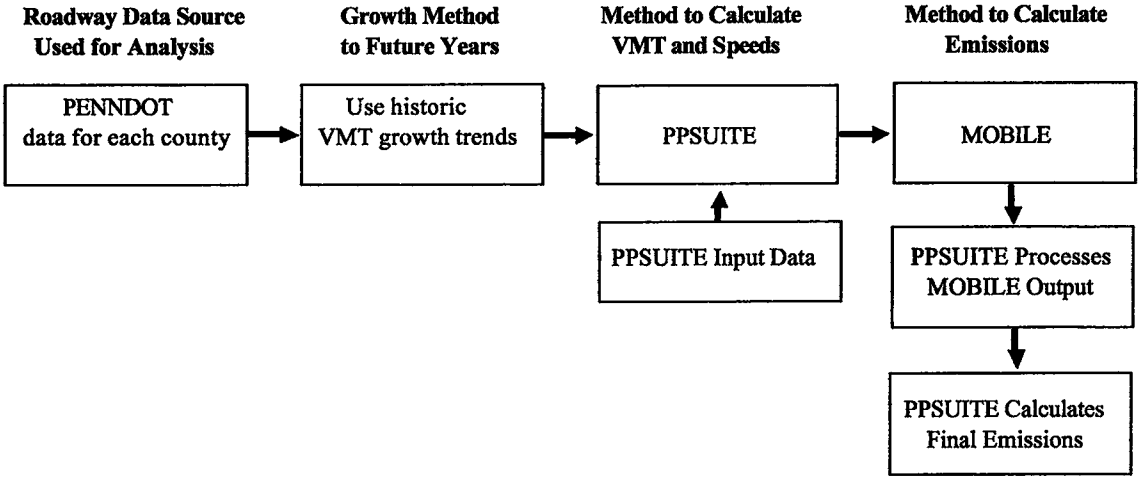
?? Analyzes highway operating conditions
?? Calculates highway speeds
?? Compiles vehicle miles of travel (VMT) and vehicle type mix data
?? Prepares MOBILE6 runs
?? Calculates emission quantities from output MOBILE6 emission rates and accumulated highway VMT.

PPSUITE has become a widely used and accepted tool for estimating speeds and processing MOBILE emission rates. It is currently being used for the New York City region, for the north and south New Jersey regions, and in other states including Louisiana, Virginia, and Indiana. The software is based upon accepted transportation engineering methodologies. For example, PPSUITE utilizes speed and delay estimation procedures based on planning methods provided in the 2000 Highway Capacity Manual, a report prepared by the Transportation Research Board (TRB) summarizing current knowledge and analysis techniques for capacity and level-of-service analyses of the transportation system.

These two computer programs interact as shown in Exhibit 1.

Exhibit 1

Emission Calculation Process for Pennsylvania



WHERE DOES PENNSYLVANIA OBTAIN ITS DATA?

Data Used in MOBILE

Two major types of information are written into the MOBILE model by EPA: basic emission rates and travel weighting rates. EPA's Office of Mobile Sources obtains this information from a number of sources, including its new vehicle certification program, in-use vehicle random sample studies and special studies (including information from some state I/M programs). For more information on MOBILE, a users guide and various documents (as well as the model itself) are available through EPA's website (http://www.epa.gov/OMSWWW/models.htm).

Basic emission rates are those which are produced under very standardized conditions. The model then modifies (corrects and/or weights) these rates based on other model or input parameters. Rates are incorporated for model year and vehicle type. MOBILE also calculates an assumed amount of increase in emissions as vehicles accumulate mileage.

In addition to exhaust emissions, evaporative VOC emission sources from gasoline-powered vehicles are also included[1]:

?? diurnal emissions (evaporated gasoline emissions generated by the rise in temperature over the course of a day when the vehicle is not being driven),
?? hot soak emissions (evaporated gasoline emissions occurring after the end of a vehicle trip, due to the heating of the fuel, fuel lines, fuel vapors),
?? running loss emissions (evaporated gasoline emissions occurring while a vehicle is driven, due to the heating of the fuel and fuel lines),
?? resting loss emissions (small but continuous seepage and minor leakage of gasoline vapor through faulty connections, permeable hoses and other materials in the fuel system).

Evaporative emissions are very dependent on temperature and fuel volatility as well as vehicle model year.

Travel Weighting Fractions. Research has found that newer cars tend to be driven more. The model reflects this, using state-specific vehicle age distributions from registration data. The model also contains assumptions about trips per day and miles per day by age of the vehicle. This is important for exhaust emissions because these emissions are greater when the vehicle is not warmed up (cold start). Also, this information helps characterize evaporative emissions.

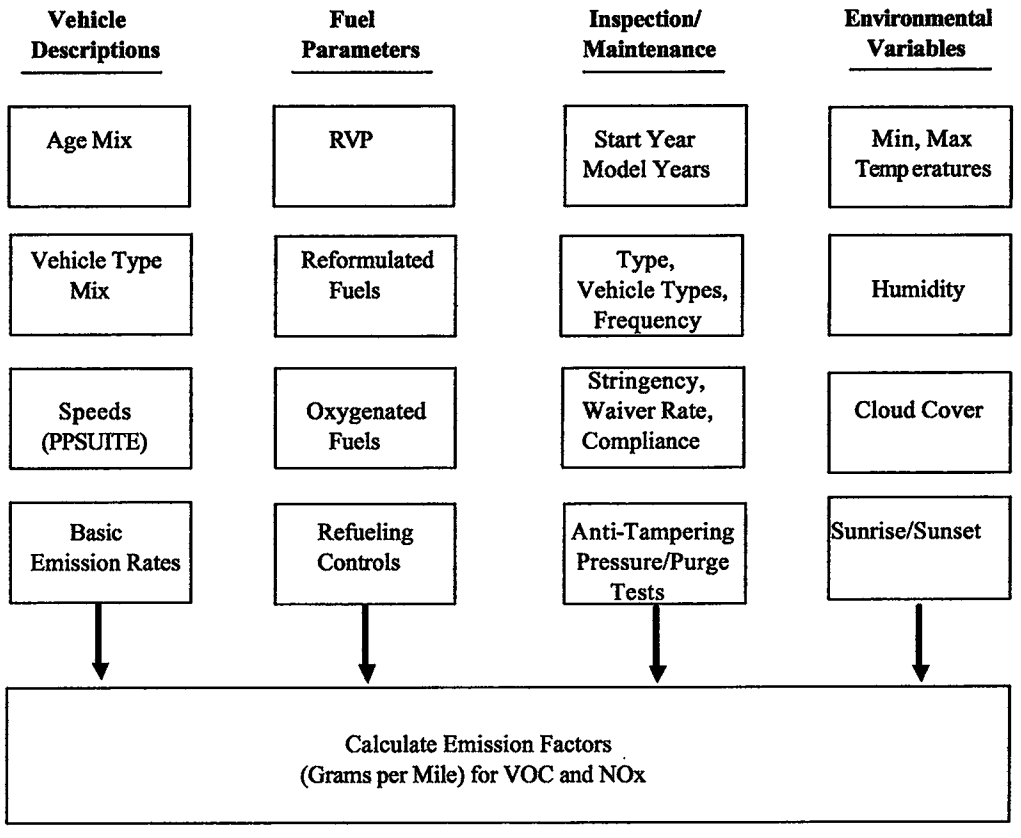
[1] Some states use MOBILE to estimate refueling emissions (gasoline vapor emissions generated by the refueling of vehicles, where in the absence of controls the vapor in the vehicle fuel tank is displaced by the incoming liquid fuel and released to the atmosphere). Pennsylvania handles these emissions in the area source inventory.

What Are The Necessary Data Inputs to MOBILE?

A large number of inputs to MOBILE are needed to fully account for the numerous vehicle and environmental parameters that affect emissions including traffic flow characteristics (as determined from the PPSUITE software), vehicle descriptions, fuel parameters, inspection/maintenance program parameters, and environmental variables as shown in Exhibit 2. With some input parameters, MOBILE allows the user to choose default values, while others require area-specific inputs.

Exhibit 2

MOBILE Inputs



For an emissions inventory, area specific inputs are used for all of the items shown in Exhibit 2 except for the basic emission rates, which are MOBILE defaults. In addition, Pennsylvania uses the MOBILE6 default starts-per-day data and soak distributions that are used to calculate the number of starts in cold and hot start modes. EPA requires that the number of starts occurring per vehicle be determined from instrumented vehicle counts. Since such local data is not available, the MOBILE6 national defaults are used for the Pennsylvania analyses. A vehicle will generate more emissions when it is first operated (cold start). It generates emissions at a different rate when it is stopped and then started again within a short

period of time (hot start). Soak distributions are used to determine the time between when an engine is turned off to the next time it is restarted.

Vehicle Descriptions. Vehicle age distributions are input to MOBILE for each county based on registered vehicles reflecting July 1 summer conditions. These distributions are obtained from PENNDOT's Bureau of Motor Vehicle Registration Database. Vehicle Type Mix is calculated from algorithms using a combination of MOBILE6 default percentages and PENNDOT truck percentages from roadway data. (See also the discussion of Vehicle Type Pattern Data in the next section.) Speeds are discussed extensively in the next section.

Significant changes have occurred in the MOBILE6 model as compared to previous releases. Some of the information previously applied by the post processor after running MOBILE can now be input directly to the MOBILE6 model run. This includes information on the hourly distribution of VMT and the hourly speeds that occur during the day. Another important change in MOBILE6 is the influence of facility type on output emission factors. For example, MOBILE6 assumes that an average speed on a freeway results in a different emission factor than the same speed on an arterial roadway. Thus MOBILE6 is indirectly accounting for the accelerations and decelerations that typically occur on such roadways. MOBILE6 has four distinct facility types: Freeway, Arterial, Local, and Ramp. For any emission run, the input functional classes analyzed must be mapped to the above facility types. The following mapping scheme is used for the Pennsylvania runs:

PENNDOT Functional Classes	***MOBILE6 Facility Type***
1,11,12	Freeway
2,6,7,8,14,16,17	Arterial
9,19	Local

Since ramps are not directly represented within the RMS database information, it is assumed that 8% of the Freeway VMT is Ramp VMT. This is consistent with the recommendations provided in EPA's Technical Guidance on the Use of MOBILE6 for Emissions Inventory Preparation.

Fuel Parameters. The same vehicle will produce different emissions using a different type of gasoline. Fuel control strategies can be powerful emission reduction mechanisms. An important variable in fuels for VOC emissions is its evaporability, measured by Reid Vapor Pressure.

MOBILE allows the user to choose among conventional (used in most of Pennsylvania), federal reformulated (now used in the Philadelphia area), oxygenated (not used in Pennsylvania) and low Reid Vapor Pressure (RVP) gasolines (used in the Pittsburgh area starting in 1998). Pennsylvania chooses the MOBILE inputs appropriate to the year and control strategy for the area being modeled.

MOBILE also allows users to calculate refueling emissions -- the emissions created when vehicles are refueled at service stations. Pennsylvania includes refueling emissions in its area source inventory and not in its highway vehicle inventory. However, that calculation uses a grams per gallon emission rate generated by MOBILE.

Vehicle Emission Inspection/Maintenance (I/M) Parameters. MOBILE allows users to vary inputs depending on the I/M program in place for the area or, of course, choose "no I/M program." The inputs include:

?? program start year

?? stringency level (failure rate) and pass/fail standards or "cutpoints"
?? first and last model years subject to the program
?? waiver rates
?? compliance rates
?? program type (test-only, test-and-repair, etc.) and effectiveness
?? frequency of inspection (annual, biennial)
?? vehicle type coverage
?? test type (idle, loaded, etc.)
?? technician training program

Some cutpoints (the emissions at which vehicles are failed) are contained in MOBILE, while others must be put in by the model user. Pennsylvania uses the parameters specific for the geographic area and year for which the modeling is being performed.

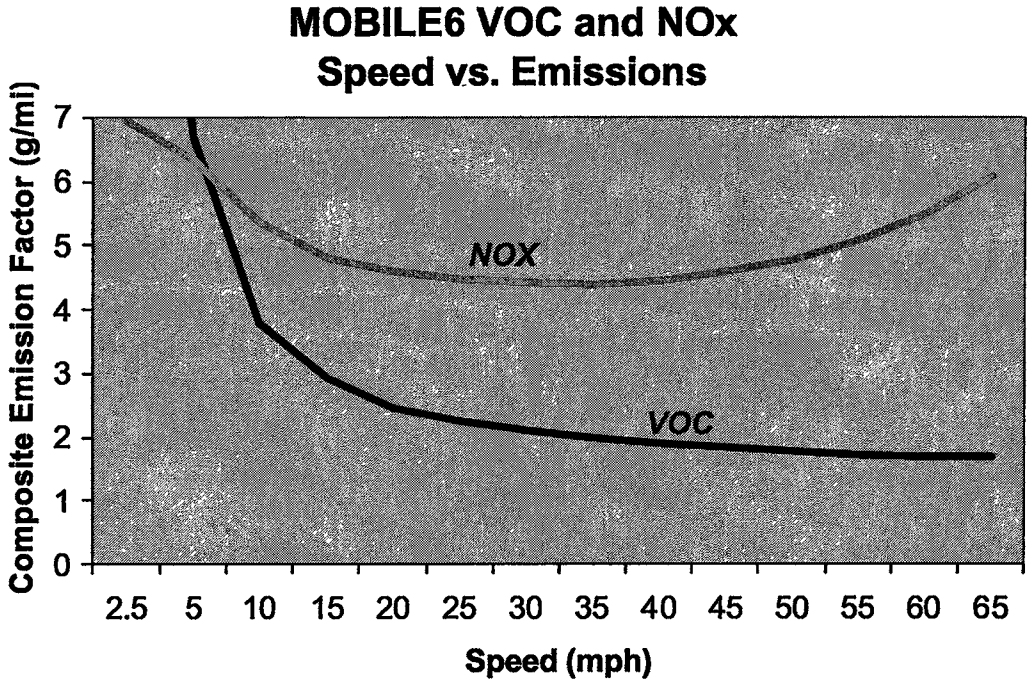
Environmental Variables. Evaporative emissions are influenced significantly by the temperatures of the surrounding air. Minimum and Maximum temperatures have been compiled for each county based on information from EPA's CHIEF bulletin board reflecting airport temperatures on emission violation days.

Emission and Speed Relationships

Of all the user-supplied input parameters, perhaps the most important is vehicle speed. Emissions of both VOC and NOx vary significantly with speed, but the relationships are not linear, as shown in Exhibit 3. While VOCs generally decrease as speed increases, NOx decreases only at the low speed range and increases steeply at higher speeds.

To obtain the best estimate of vehicle speeds, Pennsylvania uses the PPSUITE set of programs, whose primary function is to calculate speeds and to organize and simplify the handling of large amounts of data needed for calculating speeds and for preparing MOBILE input files.

Exhibit 3



Roadway Data

The roadway data input to emissions calculations for Pennsylvania uses information from the Roadway Management System (RMS) maintained by PENNDOT's Bureau of Planning and Research. PENNDOT obtains this information from periodic visual and electronic traffic counts. RMS data is dynamic since it is continually reviewed and updated from new traffic counts and field visits conducted by PENNDOT. Information on roadways included in the National Highway System is reviewed at least annually, while information on other roadways is reviewed at least biennially.

On a triennial basis, a current "snapshot" of the RMS database is taken and downloaded to provide an up-to-date record of the Commonwealth's highway system for estimating emissions. The snapshot of 1990 data is always used to represent 1990 conditions. The current "snapshot", in this case 1999, is used for base year runs and forecast year runs (with growth factors applied to traffic volumes for future years).

The RMS database contains all state highways, including the Pennsylvania Turnpike, divided into segments approximately 0.5 miles in length. These segments are usually divided at important intersections or locations where there is a change in the physical characteristics of the roadway (e.g. the number of lane changes). There are approximately 99,000 state highway segments for the 67 Pennsylvania counties contained in the RMS. Each of these segments contains an abundance of descriptive data, but only the following information is extracted for emission calculations:

?? Lanes

?? Distances
?? Volumes in Average Annual Daily Traffic (AADT)
?? Truck percentages
?? PENNDOT urban/rural classifications
?? PENNDOT functional class codes

RMS volumes and distances are used in calculating highway VMT totals for each county. As discussed in the next section, adjustments are needed to convert the volumes to an average July weekday. Lane values are an important input for determining the congestion and speeds for individual highway segments. Truck percentages are used in the speed determination process and are used to split volumes to individual vehicle types used by the MOBILE software.

Pennsylvania classifies its road segments by function, as well as whether it is located in an urban, small urban or rural area, as indicated below in Exhibit 4. The PENNDOT urban/rural (UR) and functional classes (FC) are important indicators of the type and function of each roadway segment. The variables provide insights into other characteristics not contained in the RMS data that are used for speed and emission calculations. In addition, VMT and emission quantities are aggregated and reported using both UR and FC codes.

Exhibit 4

PENNDOT Classification Scheme: Urban/Rural Codes and Functional Class Codes

Urban/Rural Code	1=Rural 2=Small Urban 3=Urban	
Functional Class	Rural Functional Classes Used For Rural Areas	Urban Functional Classes Used For Small Urban and Urban Areas
	1=Rural Freeway	11=Urban Freeway
	2=Rural Other Principal Arterial	12=Urban Expressway
	6=Rural Minor Arterial	14=Urban Principal Arterial
	7=Rural Major Collector	16=Urban Minor Arterial
	8=Rural Minor Collector	17=Urban Collector
	9=Rural Local	19=Urban Local

Note: Functional Classes 3,4,5,10,13,15,18 are not currently used in PENNDOT's RMS database

Additions and Adjustments to Roadway Data

Before the RMS data can be used by PPSUITE for speed and emission calculations, several adjustments and additions must be made to the roadway data.

HPMS Adjustments: According to EPA guidance, baseline inventory VMT computed from the RMS highway segment volumes must be adjusted to be consistent with Highway Performance Monitoring System (HPMS) VMT totals. The HPMS VMT reported for Pennsylvania is a subsystem of the RMS established to meet the data reporting requirements of the Federal Highway Administration (FHWA) and to serve as PENNDOT's official source of highway information. Although it has some limitations, the HPMS system is currently in use in all 50 states and is being improved under FHWA direction.

The HPMS VMT totals are developed from the data contained in the RMS database at the time of reporting and serves as a "snapshot" of the RMS data for a particular year. Since the RMS database does not contain many local roads, a separate procedure is used by PENNDOT to estimate total local VMT for the HPMS system. HPMS VMT summaries are prepared each year and reported by PENNDOT urban/rural and functional class codes. The VMT contained in the HPMS reports are considered to represent average annual daily traffic (AADT).

Although the HPMS VMT and the roadway data used for an inventory emissions analysis are both based on data from the RMS system, differences do exist between them and include the following. First, the HPMS and inventory roadway data are "snapshots" of the RMS data taken at different times. Since the RMS is dynamic, changing constantly due to new data, differences will result between the data used for calculating HPMS VMT totals and the inventory data used for an emissions analysis. Second, local estimates of HPMS VMT are obtained through alternative procedures developed by PENNDOT. However, the emissions inventory makes use of those few local roads contained in the RMS system. To account for such differences, adjustment factors are calculated and used to adjust the inventory roadway data to the reported HPMS VMT totals submitted to FHWA.

Adjustment factors are calculated which adjust the 1990 RMS VMT to be consistent with 1990 HPMS totals. In addition, the base year RMS download (in this case 1999) is also adjusted to the reported HPMS totals for that year. These factors are developed for each county, urban/rural code, and functional class combination and are also applied to all future year runs. Adjustments for the "higher" functional classes (e.g. Freeway, Arterials - major routes) were very close to 1.000 since HPMS VMT is derived from RMS information, and the only difference in the data is that the "snapshot" for the emission calculations is taken at a different time than for the HPMS. "Lower" classes (e.g. local roads) require greater adjustment since a large part of the local system is not under state jurisdiction and is not in the RMS database. There is, of course, a significant amount of local road mileage in the state. It is assumed that those local streets that are in RMS are representative of all local streets in their area with respect to volume and speed, so that roadway mileage adjustment is appropriate.

Seasonal Adjustments to Volumes: The RMS contains AADT volumes that are an average of all days in the year including weekends and holidays. An ozone emission analysis, however, is based on a typical July weekday. Therefore, those volumes must be seasonally adjusted. Seasonal factors were developed for each functional class and urban/rural code based on yearly count information prepared by PENNDOT's Bureau of Planning and Research. These factors are applied to the existing RMS AADT volumes to produce the July volumes.

Additional Network Information: The PPSUITE software system allows for many additional variables other than those available in the RMS database. Using these variables improves the ability of Pennsylvania to incorporate real roadway conditions into its estimates. The variables include information regarding signal characteristics and other physical roadway features that can affect a roadway's

calculated congested speed. PPSUITE's ability to estimate congested speeds by road segment improves Pennsylvania's emissions inventories because of the overwhelming role speed plays in emission rates. If specific information regarding these variables is known or obtained for areas, this information can be appended to the RMS database. Otherwise, default values are assumed based on information provided by the PPSUITE input speed/capacity lookup data as described below.

Speed/capacity lookup data provides PPSUITE with initial (free-flow with no congestion) speeds and capacities for different urban/rural code and functional class groupings. The initial speeds and capacities are used by PPSUITE in determining the final congested speed for each roadway segment. Speeds can also be greatly impacted by signals and other roadway features. As a result, this data provides default signal densities (average number of signals per mile for different functional classes) as well as default values for variables that determine the decay of speed with varying levels of congestion. As discussed above, values from the speed/capacity data can be overridden for specific links by directly coding values to the roadway database segments. The speed capacity data was developed from a combination of sources including the following:

?? Information contained in the 2000 Highway Capacity Manual
?? PENNDOT information on speeds and signal densities
?? Engineering judgment

24-hour Pattern Data: Speeds and emissions vary considerably depending on the time of day (because of temperature) and congestion. Therefore, it is important to estimate the pattern by which roadway volume varies by hour of the day. The 24-hour pattern data provides PPSUITE with information used to split the daily roadway segment volumes to each of the 24 hours in a day. Pattern data is in the form of a percentage of the daily volumes for each hour. Distributions are provided for each county and functional class grouping. This data was developed from 24-hour count data compiled by PENNDOT's Bureau of Planning and Research, according to the process in Procedures for Adjusting Traffic Count Data, 1999.

Vehicle Type Pattern Data: Basic emission rates may differ by vehicle type. These types are listed below in Exhibit 5.

Exhibit 5

MOBILE6 Input Composite Vehicle Classes

1.	LDV	- Light-Duty Vehicles (Passenger Cars)
2.	LDT1	- Light-Duty Trucks 1 (<6,000 lbs)
3.	LDT2	- Light-Duty Trucks 2 (<6,000 lbs, LVW=3,751-5,750)
4.	LDT3	- Light-Duty Trucks 3 (6,001-8,500 lbs)
5.	LDT4	- Light-Duty Trucks 4 (6,001-8,500 lbs, LVW>5,751)
6.	HDV2B	- Class 2b Heavy Duty Vehicles
7.	HDV3	- Class 3 Heavy Duty Vehicles
8.	HDV4	- Class 4 Heavy Duty Vehicles
9.	HDV5	- Class 5 Heavy Duty Vehicles
10.	HDV6	- Class 6 Heavy Duty Vehicles
11.	HDV7	- Class 7 Heavy Duty Vehicles
12.	HDV8A	- Class 8a Heavy Duty Vehicles

13.	HDV8B	- Class 8b Heavy Duty Vehicles
14.	HDBS	- School Buses
15.	HDBT	- Transit and Urban Buses
16.	MC	- Motorcycles

MOBILE summary reports by vehicle type are also useful in knowing what kinds of vehicles generate emissions. The vehicle type pattern data is used by PPSUITE to divide the hourly roadway segment volumes to the sixteen MOBILE6 (MOBILE5 had eight) vehicle types. Similar to the 24-hour pattern data, this data contains percentage splits to each vehicle type for every hour of the day. The vehicle type pattern data was developed from several sources of information:

?? Hourly distributions for trucks and total traffic compiled by PENNDOT's Bureau of Planning and Research, according to Procedures for Adjusting Traffic Counts, 1999
?? PENNDOT truck percentages from the RMS database
?? MOBILE6 default vehicle type breakdowns for the analysis year

The vehicle type pattern data is developed for each county and functional class combination. First, RMS truck percentages are averaged for all roadways within a county, functional class grouping. Using this percentage data, the total roadway volume for any segment could be divided to both auto and truck vehicle type categories. However, these percentages do not yet enable volumes to be divided to each of the sixteen MOBILE6 vehicle types. As a result, MOBILE6 default vehicle type breakdowns are then used to divide the auto and truck percentages, calculated above, to each specific MOBILE6 vehicle type. Note that the defaults used vary by analysis year; as a result, each forecast year will utilize a unique vehicle mix distribution. PENNDOT hourly distributions for trucks and total traffic are then used to create vehicle type percentage breakdowns for each hour of the day.

Vehicle Type Capacity Analysis Factors: Vehicle type percentages are provided to the capacity analysis section of PPSUITE to adjust the speeds in response to trucks. That is, a given number of larger trucks take up more roadway space than a given number of cars, and this must be accounted for in the model. Capacity is adjusted based on the factors provided in this data. Values are developed from information in the 2000 Highway Capacity Manual and are specific to the various facility types.

Producing Future Year Volumes

Growth factors are used to project future highway volumes from the volumes provided in the RMS database. Separate factors are derived for each county and highway functional class from an analysis of historic global update factors provided by PENNDOT's Bureau of Planning and Research, coupled with estimates of population and employment growth from the U.S. Department of Commerce's Bureau of Economic Analysis (BEA). The factors are then applied to base year traffic volumes (in this case 1999) on each highway segment in the RMS network database.

The factors prepared by the Bureau of Planning and Research are summarized by county and functional class in their annual traffic factor report. The latest growth rates use information from 1996 to 2001.

SPEED/EMISSION ESTIMATION PROCEDURE

The previous sections have summarized the input data used for computing speeds and emission rates for Pennsylvania. This section explains how PPSUITE and MOBILE use that input data to produce emission estimates. Exhibit 6 on the following page summarizes PPSUITE's analysis procedure used for each of the 99,000 highway segments in the state.

Producing an emissions inventory with PPSUITE requires a process of disaggregation and aggregation. Data is available and used on a very small scale -- individual ½ mile roadway segments 24 hours of the day. This data needs to first be aggregated into categories so that a reasonable number of MOBILE scenarios can be run, and then further aggregated and/or re-sorted into summary information that is useful for emission inventory reporting.

One of the major enhancements of MOBILE6 is the increased detail of traffic that can be input to the emissions model. The PPSUITE post processor calculates hourly speeds for each roadway segment. Since previous versions of MOBILE only allowed one average speed as input for each scenario, the post-processed speeds had to be aggregated and run through MOBILE with scenarios representing four separate time periods. MOBILE6 allows for direct input of the 24 hourly speeds as well as options to account for each link's speed separately. These added features utilize the full extent of the information output from the speed processing programs and provide for more accurate emission estimates of the available traffic data.

Volume/VMT Development

Before speeds can be calculated and MOBILE run, volumes acquired from RMS must be adjusted and disaggregated. Such adjustments include factoring to future years, seasonal adjustments, and disaggregating daily volumes to each hour of the day and to each of the sixteen MOBILE6 vehicle types.

Future Year Volumes: The RMS database contains up-to-date current year volumes. However, to conduct a future year analysis, these volumes must be factored to the year being analyzed. Growth factors have been prepared based on historic PENNDOT growth trends for each county, urban/rural area code, and functional class grouping. These growth factors are applied to the base year RMS volumes to obtain future year estimates that can be utilized by PPSUITE.

Example:

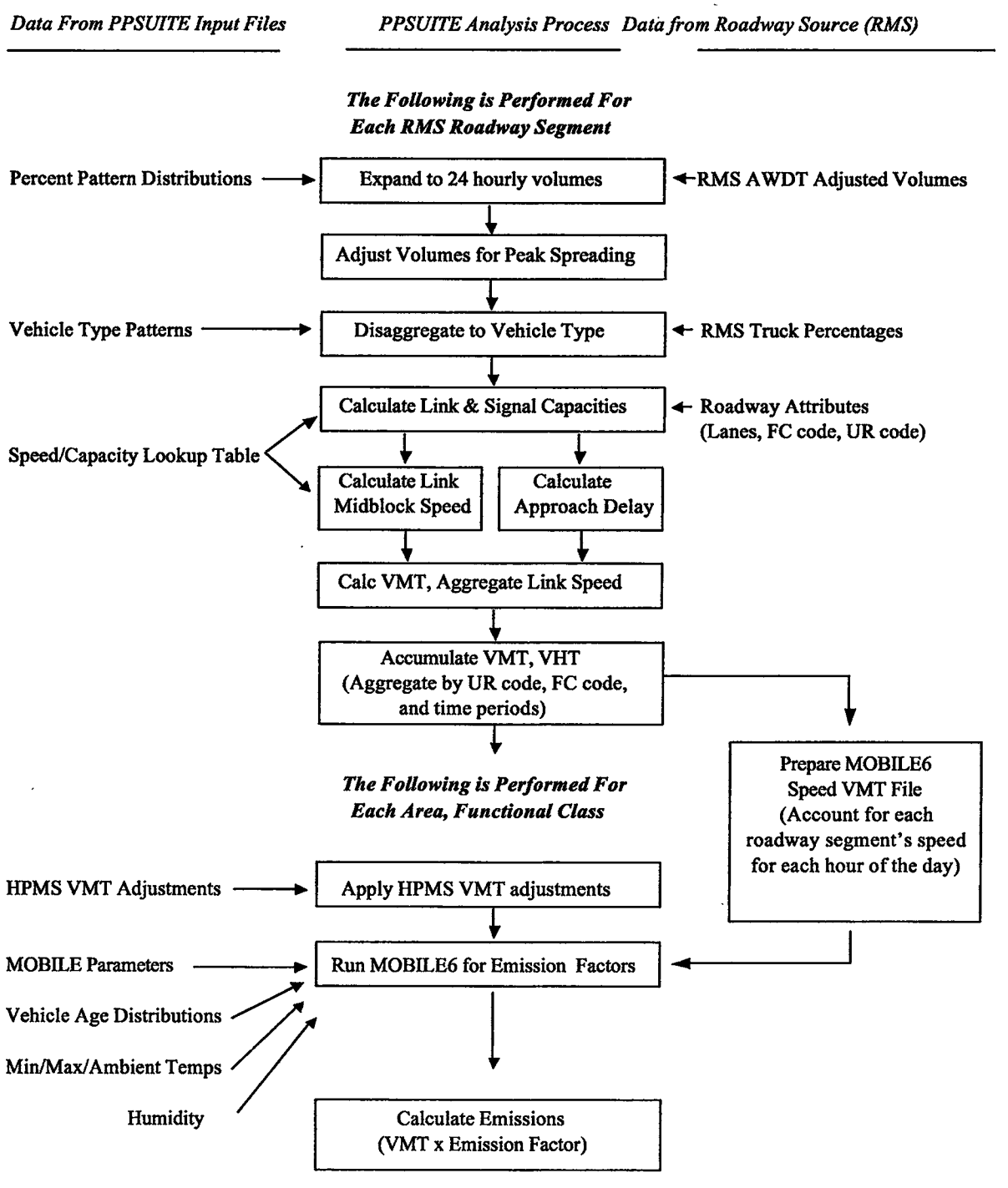
A typical freeway link in the RMS database is I-80 segment 2500 in Luzerne County, Pennsylvania. This link has an urban/rural code=1 which indicates the link is in a rural area, and a functional class=1 indicating a rural freeway. The average annual daily traffic (AADT) from the RMS database for this link in 1990 is 12,077 vehicles/day.

Growth factors have been developed to factor the 1990 volume to future years. For example, to factor the 1990 volume to the year 2002, a factor of 1.282 has been developed for Luzerne County rural freeways.

2002 volume = 12,077 vehicles/day x 1.282 = 15,483 vehicles/day

Exhibit 6

PPSUITE Speed/Emission Estimation Procedure



Seasonal Adjustments: PPSUITE takes the input daily volumes from RMS which represent AADT and seasonally adjusts the volumes to an average weekday in July. This adjustment utilizes factors developed for each functional class and urban/rural code. VMT can then be calculated for each link using the adjusted weekday volumes.

Example:

Again, assume the rural freeway link: I-80 segment 2500 in Luzerne County, Pennsylvania. The average annual daily traffic (AADT) for this link in 1990 is 12,077 vehicles/day.

Seasonal factors have been developed for urban/rural code and functional class combinations. For an urban/rural code=1 and a functional class=1, the factor to convert from AADT to an average weekday in July is = 1.15

Average Weekday July Volume = 12,077 x 1.15 = 13,889 vehicles/day

Total VMT (daily) for this link is calculated as volume x distance. The distance of this link as obtained from RMS is 0.286 miles.

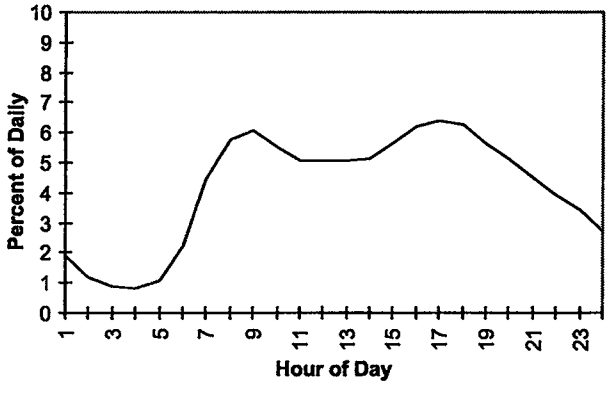
1990 VMT = 13,889 vehicles/day x 0.296 miles = 41,111 vehicle-miles / day

---

Disaggregation to 24 Hours: After seasonally adjusting the link volume, the volume is split to each hour of the day. This allows for more accurate speed calculations (effects of congested hours) and allows PPSUITE to prepare the hourly VMT and speeds for input to the MOBILE6 model.

Example:

To support speed calculations and emission estimates by time of day, the July weekday volume is disaggregated to 24 hourly volumes. Temporal patterns were previously developed from PENNDOT count data and input to PPSUITE. For the I-80 rural freeway link with morning peak volumes similar to evening peak hours (neutral), the following temporal pattern is applied:



Using the I-80 segment for 1990, typical hourly volumes which result include:

8-9 a.m.	6.0% x (41,111 vehicle miles/ 0.296mi.) = 833 vehicles/hour (vph)
12-1 p.m.	5.0% x (41,111 vehicle .miles/ 0.296mi.) = 694 vph
5-6 p.m.	6.3% x (41,111 vehicle miles/ 0.296mi.) = 875 vph

After dividing the daily volumes to each hour of the day, PPSUITE identifies hours that are unreasonably congested. For those hours, PPSUITE then spreads a portion of the volume to other hours within the same peak period, thereby approximating the "peak spreading" that normally occurs in such over-capacity conditions.

Disaggregation to Vehicle Type: EPA requires VMT estimates to be prepared by vehicle type, reflecting specific local characteristics. As a result, for Pennsylvania's emission inventory runs, the hourly volumes are disaggregated to the sixteen MOBILE6 vehicle types based on count data assembled by PENNDOT in combination with MOBILE6 defaults.

Example:

Disaggregation of the total I-80 volume (by hour) to the various vehicle types would include the following:

Total Volume 8-9 am = 833 vph

Vehicle Type Volume 8-9 am:

LDV	40.7%	338 vph
LDT1	7.4%	62 vph
LDT2	24.8%	207 vph
LDT3	7.6%	63 vph
LDT4	3.5%	29 vph
HDV2b	5.0%	42 vph
HDV3	0.5%	4 vph
HDV4	0.4%	3 vph
HDV5	0.3%	3 vph
HDV6	1.1%	9 vph
HDV7	1.3%	11 vph
HDV8a	1.4%	12 vph
HDV8b	5.1%	42 vph
HDBS	0.3%	3 vph
HDBT	0.1%	1 vph
MC	0.5%	4 vph

Speed/Delay Determination

EPA recognizes that the estimation of vehicle speeds is a difficult and complex process. Because emissions are so sensitive to speeds, it recommends special attention be given to developing reasonable and consistent speed estimates; it also recommends that VMT be disaggregated into subsets that have roughly equal speed, with separate emission factors for each subset. At a minimum, speeds should be estimated separately by roadway functional class.

The computational framework used for this analysis meets and exceeds that recommendation. Speeds are individually calculated for each roadway segment and hour and include the delays encountered at signals. Rather than accumulating the roadway segments into area/functional groupings and calculating an average speed (as done in past), each individual link hourly speed is represented in the MOBILE6 speed VMT file. This represents a significant enhancement in the MOBILE model since past versions only allowed input of

one average speed for each scenario. MOBILE6 allows the input of a distribution of hourly speeds. For example, if 5% of a county's arterial VMT operate at 5 mph during the AM peak hour and the remaining 95% operate at 65mph, this can be represented in the MOBILE6 speed input file. For the Pennsylvania runs, distributions of speeds are input to MOBILE6 for separate scenarios representing county and functional class groupings; VMT is accumulated by the same groupings for the application of the emission factors to produce resulting emission totals.

To calculate speeds, PPSUITE first obtains initial capacities (how much volume the roadway can serve before heavy congestion) and free-flow speeds (speeds assuming no congestion) from the speed/capacity lookup data. As described in previous sections, this data contains default roadway information indexed by the urban/rural code and functional class. For areas with known characteristics, values can be directly coded to the RMS database and the speed/capacity data can be overridden. However, for most areas where known information is not available, the speed/capacity lookups provide valuable default information regarding speeds, capacities, signal densities and characteristics, and other capacity adjustment information used for calculating congested delays and speeds.

Example:

The speed/capacity lookup table is used to obtain important data used for link speed calculations. For the I-80 link with an urban/rural code = 1 (rural) and a functional class = 1 (freeway), the lookup table provides information including the following:

freeflow speed = 65 mph
capacity = 1800 vph per lane
number of signals = 0

This information is used along with the physical characteristics of the roadway to calculate the delay (including congestion) to travel this link during each hour of the day:

For example: The I-80 link is calculated to have a travel time, including delay of 17.76 seconds for the 8-9am hour

Total travel time, in vehicle hours, for the 8-9am hour is calculated as:

VHT (8-9am) = 17.76 seconds x 833vph / 3600 sec/hr = 4.12 vehicle hours

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The result of this process is an estimated average travel time for each hour of the day for each highway segment. The average time can be multiplied by the volume to produce vehicle hours of travel (VHT).

HPMS and VMT Adjustments

Volumes must also be adjusted to account for differences with the HPMS VMT totals, as described previously. VMT adjustment factors are provided as input to PPSUITE, and are applied to each of the roadway segment volumes. These factors were developed from 1990 and 1999 data; however, they are also applied to any future year runs. The VMT added or subtracted to the RMS database assumes the speeds calculated using the original volumes for each roadway segment for each hour of the day.

Example:

Using the Luzerne County I-80 rural freeway link example, the daily assigned volume is adjusted to account for reconciliation with the HPMS VMT. RMS VMT (in AADT) for Luzerne County rural freeways totals 962,559 vehicle miles in 1990. HPMS VMT (in AADT) as supplied by PENNDOT and reported to FHWA totals to 990,088 vehicle miles for the rural freeways. A factor is developed by dividing the HPMS VMT by the RMS VMT:

HPMS adjustment factor for Luzerne County rural freeways = 990,088 / 962,559 = 1.029

This factor is held constant in all future years. As an example, this adjustment is made to the I-80 freeway link VMT for the 8-9am hour after speed calculations are made, and produces the final July weekday VMT for this hour used for Ozone runs.

I-80 Link VMT (8-9am) = 833vph x 0.296 miles x 1.029 = 254 vehicle miles

VMT and Speed Aggregation

As discussed in previous sections, MOBILE6's ability to handle input distributions of hourly speeds has eliminated the need to aggregate speed data. For Pennsylvania runs, PPSUITE has been set up to automatically accumulate VMT and VHT by geographic areas and highway functional class. The speed files input to MOBILE6 for each scenario contain the actual distribution of roadway speeds for that aggregation group. Exhibit 7 illustrates the scenario aggregation scheme used with MOBILE6.

Exhibit 7

VMT/VHT Aggregation Scheme

County			67 entries
Urban/Rural Code	1=Rural 2=Small Urban 3=Urban		
Functional Class	1=Rural Freeway 2=Rural Other Principal Arterial 6=Rural Minor Arterial 7=Rural Major Collector 8=Rural Minor Collector 9=Rural Local	11=Urban Freeway 12=Urban Expressway 14=Urban Principal Arterial 16=Urban Minor Arterial 17=Urban Collector 19=Urban Local	18 entries
			1,206 potential combinations

Geographic aggregation is performed by urban, small urban, and rural areas of each county. Functional class aggregation is according to PENNDOT's eighteen standard functional classes, respecting urban, small urban and rural definitions. For an individual county, this creates a potential for 18 possible combinations, each of which becomes an input MOBILE6 scenario. This allows each MOBILE6 scenario to represent the actual VMT mix and speed for that geographic / highway combination. Altogether then, there are potentially 1,206 combinations for which speeds and VMT are computed and emissions are calculated with MOBILE.

MOBILE Emissions Run

After computing speeds and aggregating VMT and VHT, PPSUITE prepares input files to be run in EPA's MOBILE6 program which is used to produce VOC and NOx emission factors in grams of pollutant per vehicle mile. The process uses an unmodified version of the MOBILE program that was obtained directly from EPA.

The MOBILE input file prepared by PPSUITE contains the following:

?? MOBILE template containing appropriate parameters and program flags
?? Temperature data specific to the county being run
?? Vehicle age and diesel sales fraction data for the county being run
?? Scenario data - contains VMT mix, speed distributions specific to scenario as produced by PPSUITE

Example:

A MOBILE input file is created by PPSUITE for Luzerne County. This file contains separate scenarios for each urban/rural code, functional class. A scenario represents a separate MOBILE run with different emission factors calculated and output for each run.

For this example, Luzerne County rural freeways will be run as a scenario with a specific VMT mix file and a speed distribution file accounting for all the roadway speeds within the grouping.

Time of Day and Diurnal Emissions

Unlike in the past using MOBILE5, VMT and speeds are no longer aggregated as separate scenarios representing time periods. This was done in the past to account for the unique speeds encountered during each time period in the day. Since MOBILE6 allows for hourly roadway speeds to be represented in the speed VMT file, such a process is no longer needed. MOBILE6 will internally account for the emissions during each hour in the day and make the necessary diurnal calculations.

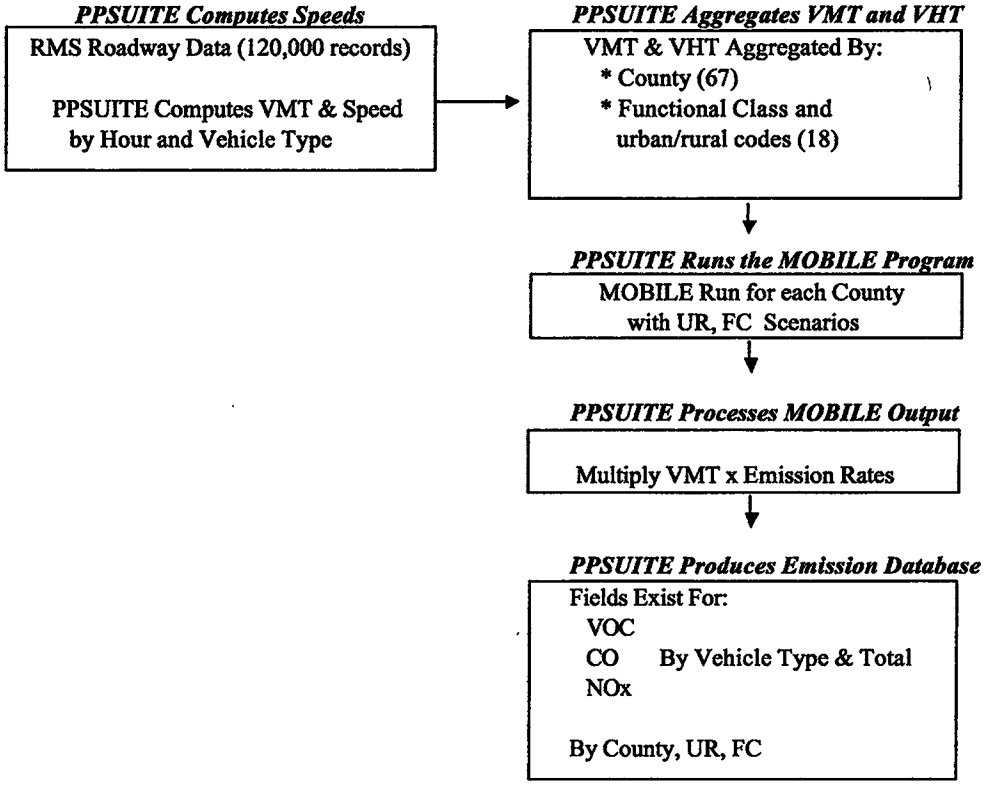
Process MOBILE Output

After MOBILE has been run, PPSUITE processes the MOBILE output files and compiles the emission factors for each scenario. Using the above methodology, it allocates daily diurnal emissions to each of the time periods. Using the MOBILE emission factors, PPSUITE calculates emission quantities by

multiplying the emission factors by the aggregated VMT totals. PPSUITE then produces an emissions database summarizing VMT, VHT, VOC, and NOx emissions as shown in Exhibit 8.

Exhibit 8

Summary of PPSUITE's Methodology in Producing Emissions Summary



Example:

Luzerne County rural freeways were run as a scenario in MOBILE. Based on the input information, MOBILE6 outputs emission factors by vehicle type for this scenario as shown below:

Composite Emission Factors (grams/mile) from MOBIL6 output

Vehicle Type:	LDGV	LDGT1	LDGT2	LDGT3	LDGT4	HDDV7 ..... For all 28 M6 types
VOC:	1.22	1.86	2.42	3.68	0.36	1.13
NOX:	2.41	3.16	3.66	7.14	1.84	5.84

PPSUITE reads these emission factors from the MOBILE6 output file and multiplies them by the Luzerne County rural freeway VMT to obtain emission totals for this scenario. (Note: emissions shown in kg/day which is converted to tons/day in SIP narratives)

PPSUITE computes emissions as follows for this scenario:

			Emission Factors (g/mi)			Emissions (kg/day)	
Veh Type	**VMT**		**VOC**	**NOX**		**VOC**	**NOX**
LDGV	84,344	x	1.22	2.41	=	102.9	203.3
LDGT1	30,713	x	1.86	3.16	=	57.1	97.1
LDGT2	21,515	x	2.42	3.66	=	52.1	78.7
LDGT3	4,209	x	3.68	7.14	=	15.5	30.1
LDGT4	3,586	x	0.36	1.84	=	1.3	6.6
HDDV7	7,483	x	1.13	5.84	=	8.5	43.7
..... Repeated for all 28 MOBILE6 vehicle types							
Total	155,903					244.6	482.0

The emissions for this scenario are reported and stored in an output database file which contains a record for each scenario with fields containing VMT, VHT, VOC emissions, and NOX emissions. Fields exist for each vehicle type and for the total of all vehicle types as shown below.

Reported by Vehicle Type 1-28 and Total --- Repeated for VHT,HC,NOX

Cnty	**UR**	**FC**	**VMT1**	**VMT2**	**VMT3**	**VMT4**	**VMT5**	**VMT6**	**VMT7**	**VMT8**	**... VMT28**
Luze	1	1	84,344	30,713	21,515	4,209	3,586	2,806	7,483	1,248	
			VHT1	**VHT2**	**VHT3**	**VHT4**	**VHT5**	**VHT6**	**VHT7**	**VHT8**	**... VHT28**
			1,298	473	331	65	55	43	115	19	
			VOC1	**VOC2**	**VOC3**	**VOC4**	**VOC5**	**VOC6**	**VOC7**	**VOC8**	**... VOC28**
			102.9	57.1	52.1	15.5	1.3	1.5	8.5	5.7	
			NOX1	**NOX2**	**NOX3**	**NOX4**	**NOX5**	**NOX6**	**NOX7**	**NOX8**	**... NOX28**
			203.3	97.1	78.7	30.1	6.6	11.6	43.7	10.9	

RESOURCES

MOBILE model

Modeling Page within EPA's Office of Mobile Sources Website (http://www.epa.gov/omswww/models.htm) contains a downloadable model, MOBILE users guide and other information. It also contains documents relating to the next version of MOBILE (MOBILE6) expected in 1999.

"AP-42" document, "Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources," as updated by Supplement A (January 1991), available in hard-copy only. This material is also in the process of being revised and updated. Contact AP-42 Project, Test and Evaluation Branch, EPA, 2565 Plymouth Road, Ann Arbor, MI 48105.

Highway Vehicle Emission Estimates (June 1992) and *Highway Vehicle Emission Estimates II* (May 1995) discusses how EPA obtains data for MOBILE and some of the shortcomings in earlier models. Similar discussions of the present version's shortcomings are discussed in papers available at the website.

User's Guide to MOBILE6.0, Mobile Source Emission Factor Model, US EPA, January 2002.

Technical Guidance on the Use of MOBILE6 for Emission Inventory Preparation, US EPA Office of Transportation and Air Quality, January 2002.

Policy Guidance on the Use of MOBILE6 for Emission Inventory Preparation, US EPA Office of Air and Radiation, January 18, 2002.

Traffic Engineering

2000 Highway Capacity Manual, Transportation Research Board, presents current knowledge and techniques for analyzing the transportation system.

Procedures for Adjusting Traffic Count Data, 1991 edition, Pennsylvania Department of Transportation, Bureau of Planning and Research

Traffic Data Collection and Factor Development Report, 1999 Data, Pennsylvania Department of Transportation, Bureau of Planning and Research.

Highway Vehicle Inventory Glossary

AADT: Average Annual Daily Traffic, average of ALL days.

AWDT: Average Weekday Daily Traffic

Basic emission rates: MOBILE emission rates based on the applicable Federal emission standards and the emission control technologies characterizing the fleet in various model years.

Cold start: parameter in MOBILE that accounts for additional emissions resulting from a cold-started engine.

Diurnals: the pressure-driven evaporative HC emissions resulting from the daily increase in temperature

Emission rate or factor: expresses the amount of pollution emitted per unit of activity. For highway vehicles, usually in grams of pollutant emitted per mile driven.

FC: Functional code, applied in data management to road segments to identify their type (freeway, local, etc.)

Fuel volatility: The ability of fuel components to evaporate, thus entering the atmosphere as pollution. Fuel volatility is usually measured as Reid Vapor Pressure (RVP) in pounds per square inch. The lower the RVP, the less volatile the fuel.

Growth factor: Factor used to convert volumes to future years

HPMS: Highway Performance Monitoring System, PENNDOT's official source of highway information and a subset of RMS.

I/M: Vehicle emissions inspection/maintenance programs ensure that vehicle emission controls are in good working order throughout the life of the vehicle. The programs require vehicles to be tested for emissions. Most vehicles that do not pass must be repaired.

MOBILE: The model EPA has developed and which Pennsylvania uses to estimate emissions from highway vehicles.

Pattern data: Extrapolations of traffic patterns (such as how traffic volume on road segment types varies by time of day, or what kinds of vehicles tend to use a road segment type) from segments with observed data to similar segments.

Program flag: In MOBILE, a numeric code which tells the program such things as how data will be provided by user (or whether default will be used) or how to tailor outputs.

PPSUITE: Post-Processor for Air Quality, a set of programs that estimate speeds and processes MOBILE emission rates.

RMS: Roadway Management System, a database maintained by PENNDOT from traffic counts and field visits

Scenario: a MOBILE run with a specific set of geographical, time period, highway facility and control strategy assumptions.

Segment: (referred to as link) division of roadway in the PENNDOT Roadway Management System. Usually represents 0.5 mile segments of roadway.

UR: Urban/rural code, applied in data management to identify whether a road segment is urban, small urban or rural.

VHT: vehicle hours traveled.

VMT: vehicle miles traveled. In modeling terms, it is the simulated traffic volumes times link length.

Vehicle Type: One of eight types, distinguished primarily by fuel type and/or weight, used in MOBILE modeling.

Appendix C

Summary of VMT, VOC and NOx Inventories and Forecasts by County

SUMMARY VMT, VOC AND NOx INVENTORY
FOR HIGHWAY VEHICLES BY COUNTY

Scenario				1990 Baseline		Control Strategy	
County	1990 VMT	2005 VMT	Total Growth	VOC (tons/day	NOX (tons/day)	VOC (tons/day)	NOX (tons/day)
	Avg. Speed	Ave. Speed	(from 1990)			% Reduction (from 2005 Adj. Base)	
2005							
Buck	12,851,016	15,342,941	1.19	42.97	49.98	14.27	28.75
	39.87	40.95				32.8%	13.4%
Ches	10,149,032	12,937,900	1.27	29.35	40.14	11.22	25.29
	43.42	42.69				26.4%	7.8%
Dela	8,279,610	11,350,678	1.37	25.83	29.53	11.20	20.50
	34.48	26.89				14.1%	-3.4%
Mont	16,841,029	21,422,762	1.27	51.24	61.35	16.07	35.14
	40.05	34.85				38.5%	15.6%
Phil	16,487,319	18,215,848	1.10	90.56	71.93	26.93	35.07
	16.85	14.82				39.7%	23.6%
Area Total	64,608,006	79,270,129	1.23	239.95	252.92	79.69	144.73
	29.43	26.93				33.8%	13.8%

Appendix D

MOBILE6 Modeling Parameters

MOBILE6 Input Parameters for the Philadelphia 5-County Area

Table 1a: Summary of MOBILE6 Input Parameters

INPUT PARAMETER	1990 Baseline	2005 Uncontrolled Baseline	2005 Adjusted Baseline	2005 Control Strategy
Year and Seasonal Parameters				
Emissions Calendar Year	1990	2005	2005	2005
Evaluation Month	July	July	July	July
Control Programs				
94+ LDG IMP	NLEVNE	NLEVNE	NLEVNE	NLEVNE
CAAA Standards	Enabled	Disabled	Disabled	Enabled
Tier2 Standards	Disabled	Disabled	Disabled	Enabled
Refueling Emissions	Not Included	Not Included	Not Included	Not Included
Defeat Device	Included	Included	Included	Included
I/M Programs	Basic I/M	Basic I/M	Basic I/M	OBDII/ASM
Gas Cap Check	None	None	None	YES
ATP Programs	None	None	None	7-Inspections
Fuel Characteristics				
Reformulated Gasoline (RFG)	None	None	None	MOBILE6 Fuel Program 2N
Reid Vapor Pressure (RVP)	8.4	9.0	9.0	8.7
Environmental Variables				
Min/Max Temperatures	70.7 / 93.4	70.7 / 93.4	70.7 / 93.4	70.7 / 93.4
Absolute Humidity	72.6	72.6	72.6	72.6
Cloud Cover	0% - Default	0% - Default	0% - Default	0% - Default
Altitude	Low	Low	Low	Low
Peak Sun	10am – 4 pm (Default)	10am – 4 pm (Default)	10am – 4 pm (Default)	10am – 4 pm (Default)
Sunrise/Sunset	6am – 9pm (Default)	6am – 9pm (Default)	6am – 9pm (Default)	6am – 9pm (Default)
Fleet Data				
Registration Data	93 Local Data + National Trk	99 Local Data + National Trk	99 Local Data + National Trk	99 Local Data + National Trk
Diesel Sales Fractions	National Default	99 Local Data + National Trk	99 Local Data + National Trk	99 Local Data + National Trk

INPUT PARAMETER	1990 Baseline	2005 Uncontrolled Baseline	2005 Adjusted Baseline	2005 Control Strategy
Other Scenario Data				
VMT by Vehicle Type	90 Local Data (varies by cty, fc)	99 Local Data (varies by cty, fc)	99 Local Data (varies by cty, fc)	99 Local Data (varies by cty, fc)
VMT by Hour	90 Local Data (varies by cty, fc)	99 Local Data (varies by cty, fc)	99 Local Data (varies by cty, fc)	99 Local Data (varies by cty, fc)
VMT by Facility	Each facility run as separate scenario	Each facility run as separate scenario	Each facility run as separate scenario	Each facility run as separate scenario
VMT by Speed	Calculated by PPSUITE	Calculated by PPSUITE	Calculated by PPSUITE	Calculated by PPSUITE

All other input parameter option used national defaults.

Table 1b: Inspection/Maintenance Program Input Parameters

I/M Parameters	1990 Baseline	2005 Uncontrolled Baseline	2005 Adjusted Baseline	2005 Control Strategy			
MOBILE6 I/M Test Types:	IDLE	IDLE	IDLE	OBD I/M	ASM 5015 FINAL	EVAP OBD & GC	GC
Program Start Year	84	84	84	03	97	03	97
Stringency Level	17.8	17.8	17.8	20	20		
First Model Year	68	68	68	96	81	96	75
Last Model Year	50	50	50	50	95	50	95
Waiver Rate Pre–81 Vehicles (%)	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Waiver Rate, Post–81 Vehicles (%)	1.1	1.1	1.1	3.0	3.0	3.0	3.0
Compliance Rate (%)	94.0	94.0	94.0	96.0	96.0	96.0	96.0
Program Type 1 = Test Only 2 = Test & Repair	2	2	2	2	2	2	2
Inspection Frequency 1 = Annual 2 = Biennial	1	1	1	1	1	1	1
Vehicle Types Subject to Inspection							
LDGV	2	2	2	2	2	2	2
LDGT1	2	2	2	2	2	2	2
LDGT2	2	2	2	2	2	2	2
LDGT3	2	2	2	2	2	2	2
LDGT4	2	2	2	2	2	2	2
HDGV2B	1	1	1	1	1	1	1
HDGV3	1	1	1	1	1	1	1
HDGV4	1	1	1	1	1	1	1
HDGV5	1	1	1	1	1	1	1
HDGV6	1	1	1	1	1	1	1
HDGV7	1	1	1	1	1	1	1
HDGV8A	1	1	1	1	1	1	1
HDGV8B	1	1	1	1	1	1	1
GAS BUS	1	1	1	1	1	1	1

Table 1c: Anti-Tampering Program Input Parameters

ATP Parameters	1990 Baseline	2005 Uncontrolled Baseline	2005 Adjusted Baseline	2005 Control Strategy
ATP Input Record	None	None	None	Included
Program Start Year				97
First Model Year				75
Last Model Year				50
Vehicle Types Subject to Inspection: (1 = No, 2 = Yes)				
LDGV				2
LDGT1				2
LDGT2				2
LDGT3				2
LDGT4				2
HDGV2B				1
HDGV3				1
HDGV4				1
HDGV5				1
HDGV6				1
HDGV7				1
HDGV8A				1
HDGV8B				1
GAS BUS				1
Program Type: (1 = Test Only, 2 = Test and Repair)				1
Inspection Frequency: (1 = Annual, 2 = Biennial)				1
Compliance Rate (%)				96
Inspections Performed:				
Air Pump System				2
Catalyst Removal				2
Fuel Inlet Restrictor				2
Tailpipe Lead Deposit Test				1
EGR System				2
Evaporative Control System				2
PCV System				2
Gas Cap				2

Appendix E

VMT, VOC, CO and NOx Inventory and Forecast; Emissions by County by Functional Class

VMT, VOC and NOx INVENTORY AND FORECAST
2005 Emissions by County by Functional Class

	VMT			VOC (kg/day)			Nox (kg/day)		
	1990 VMT Speed	2005 VMT Speed	Growth from 1990	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)
BUCKS County									
Rural									
1 Interstate		351,135 64.7		487		259	1,437		1,081
2 Other Prin. Arter	1,408,956 53.8	1,283,286 51.7	0.91	1,814	1,715	974 -43.19%	3,230	3,531	2,303 -34.77%
6 Minor Arterial	482,976 45.5	565,045 44.0	1.17	842	620	444 -28.40%	1,298	1,072	915 -14.68%
7 Major Collector	397,490 40.0	308,462 44.6	0.78	458	544	242 -55.59%	715	832	505 -39.29%
8 Minor Collector	481,934 35.3	406,707 40.1	0.84	626	704	326 -53.69%	915	1,033	642 -37.82%
9 Local	806,973 32.3	395,212 32.7	0.49	1,157	2,128	505 -76.27%	913	1,833	632 -65.53%
Subtotal (kg) (tons)	3,578,329	3,309,847.		5362 5.91	5711 6.29	2750 3 .03	8509 9 .38	8301 9 .15	6078 6 .70
Small Urban									
11 Interstate									
12 Other Fwy/Ex	8,796 57.3				11			24	
14 Prin. Arterial	200,075 38.4	255,490 35.9	1.28	412	276	211 -23.60%	526	403	362 -10.13%
16 Minor Arterial	10,767 28.0	32,697 26.2	3.04	60	17	29 75.00%	65	21	44 115.12%
17 Collector	32,610 28.8	94,222 28.8	2.89	164	50	82 65.13%	201	65	139 112.73%
19 Local	77,872 29.5	41,881 31.4	0.54	123	207	53 -74.38%	89	154	61 -60.48%
Subtotal (kg) (tons)	330,120	424,290		759 0.84	561 0.62	376 0 .41	881 0 .97	666 0 .73	606 0 .67
Urban									
11 Interstate	1,884,172 56.2	2,201,796 54.6	1.17	3,084	2,298	1,679 -26.96%	7,300	6,352	5,393 -15.10%
12 Other Fwy/Ex	765,078 55.6	1,138,389 54.6	1.49	1,619	940	873 -7.14%	2,742	2,056	1,950 -5.15%
14 Prin. Arterial	3,104,972 42.3	3,172,390 46.2	1.02	4,696	4,135	2,476 -40.12%	6,896	6,489	4,805 -25.95%
16 Minor Arterial	1,515,865 38.5	2,429,628 36.0	1.60	3,928	2,098	2,006 -4.39%	4,871	2,913	3,338 14.59%
17 Collector	822,412 30.2	1,429,252 31.8	1.74	2,404	1,268	1,213 -4.38%	3,006	1,628	2,079 27.68%
19 Local	850,068 21.2	1,237,349 26.2	1.46	3,643	2,262	1,576 -30.32%	2,672	1,720	1,830 6.37%
Subtotal (kg) (tons)	8,942,567	11,608,804		19375 21.36	13000 14.33	9821 10 .83	27487 30 .30	21158 23 .32	19394 21 .38
Totals (kg) (tons)	12,851,016	15,342,941		25496 28.10	19271 21.24	12946 14 .27	36877 40 .65	30125 33 .21	26078 28 .75

VMT, VOC and NOx INVENTORY AND FORECAST
2005 Emissions by County by Functional Class

	VMT			VOC (kg/day)			Nox (kg/day)		
	1990 VMT Speed	2005 VMT Speed	Growth from 1990	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)
CHESTER County									
Rural									
1 Interstate	926,720 65.0	514,986 64.8	0.56	640	995	352 -64.58%	2,488	3,952	1,889 -52.20%
2 Other Prin. Arter	1,463,278 52.9	1,515,687 52.8	1.04	2,008	1,624	1,066 -34.37%	4,230	4,017	3,038 -24.39%
6 Minor Arterial	679,571 44.6	674,080 45.6	0.99	944	802	489 -39.01%	1,561	1,472	1,094 -25.66%
7 Major Collector	856,277 39.8	795,437 41.2	0.93	1,158	1,059	591 -44.16%	1,691	1,741	1,168 -32.91%
8 Minor Collector	337,558 39.5	376,936 40.4	1.12	549	414	281 -32.16%	870	748	610 -18.40%
9 Local	1,053,185 30.5	680,029 30.6	0.65	1,904	2,572	812 -68.44%	1,578	2,390	1,085 -54.60%
Subtotal (kg) (tons)	5,316,589	4,557,155		7203 7.94	7464 8.23	3590 3 .96	12419 13 .69	14320 15 .78	8884 9 .79
Small Urban									
11 Interstate									
12 Other Fwy/Ex	44,996 55.0				51			113	
14 Prin. Arterial	43,977 53.8				50			96	
16 Minor Arterial	1,377 44.8	14,902 31.8	10.82	24	2	12 637.50%	29	3	19 589.29%
17 Collector		38,533 21.1	0.43	74		35 -66.24%	82		56 -73.50%
19 Local									
Subtotal (kg) (tons)	90,350	53,435		98 0.11	102 0.11	46 0.05	111 0.12	211 .30 0.23	75 0.08
Urban									
11 Interstate	30,089 60.0	759,105 59.8	25.23	953	32	522 1511.73%	3,436	125	2,593 1972.66%
12 Other Fwy/Ex	1,923,612 51.9	2,253,549 46.2	1.17	3,196	2,223	1,654 -25.63%	5,677	4,810	4,040 -16.02%
14 Prin. Arterial	1,327,896 43.6	1,859,363 45.4	1.40	2,632	1,598	1,354 -15.23%	3,981	2,717	2,746 1.04%
16 Minor Arterial	512,327 39.7	1,435,908 38.5	2.80	2,163	639	1,086 69.94%	2,770	953	1,871 96.29%
17 Collector	493,149 34.4	1,111,348 36.0	2.25	1,709	656	853 30.12%	2,212	898	1,503 67.37%
19 Local	455,020 30.1	908,037 32.6	2.00	2,565	1,122	1,074 -4.26%	1,835	850	1,229 44.58%
Subtotal (kg) (tons)	4,742,093	8,327,310		13217 14.57	6271 6.91	6544 7 .21	19912 21 .95	10353 11 .41	13980 15 .41
Totals (kg) (tons)	10,149,032	12,937,900		20518 22.62	13837 15.25	10181 11 .22	32442 35 .76	24885 27 .43	22940 25 .29

VMT, VOC and NOx INVENTORY AND FORECAST
2005 Emissions by County by Functional Class

	VMT			VOC (kg/day)			Nox (kg/day)		
	1990 VMT Speed	2005 VMT Speed	Growth from 1990	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)
DELAWARE County									
Rural									
1 Interstate									
2 Other Prin. Arter	331,141 54.7	93,754 55.8	0.3	127	376	69 -82%	278	901	202 -78%
6 Minor Arterial	56,201 45.2		0.0		70	-100%		89	-100%
7 Major Collector	79,325 44.7	37,846 39.8	0.5	60	97	31 -68%	64	169	43 -75%
8 Minor Collector	20,791 41.3		0.0		26	-100%		50	-100%
9 Local	123,252 32.9	61,390 33.0	0.5	180	311	78 -75%	130	259	89 -66%
Subtotal (kg) (tons)	610,710	192,990		367 0.40	880 0.97	178 0 .20	472 0 .52	1469 1 .62	333 0 .37
Urban									
11 Interstate	1,081,398 57.6	3,341,681 35.9	3.1	5,416	1,225	2,774 126%	10,004	3,771	7,313 94%
12 Other Fwy/Ex	184,836 56.6	260,774 55.5	1.4	368	218	199 -9%	610	408	432 6%
14 Prin. Arterial	3,915,823 39.0	3,388,901 40.1	0.9	5,286	5,089	2,730 -46%	7,101	7,701	4,911 -36%
16 Minor Arterial	913,401 31.5	1,722,092 28.3	1.9	3,094	1,288	1,522 18%	3,379	1,687	2,295 36%
17 Collector	839,196 26.5	1,142,071 20.9	1.4	2,358	1,270	1,116 -12%	2,302	1,562	1,566 0%
19 Local	734,246 16.8	1,302,169 10.9	1.8	3,829	1,864	1,643 -12%	2,590	1,378	1,746 27%
Subtotal (kg) (tons)	7,668,900	11,157,688		20352 22.43	10952 12.07	9983 11 .00	25985 28 .64	16507 18 .20	18262 20 .13
Totals (kg) **(tons)**	8,279,610	11,350,678		20719 22.84	11832 13.04	10160 11 .20	26458 29 .16	17975 19 .81	18595 20 .50

VMT, VOC and NOx INVENTORY AND FORECAST
2005 Emissions by County by Functional Class

	VMT			VOC (kg/day)			Nox (kg/day)		
	1990 VMT Speed	2005 VMT Speed	Growth from 1990	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)
MONTGOMERY County									
Rural									
1 Interstate		370,295 64.7		421		218	1,442		1,060
2 Other Prin. Arter	1,972,126 52.5	885,202 50.1	0.45	1,069	2,302	526 -77.17%	1,834	4,365	1,221 -72.03%
6 Minor Arterial	380,543 44.3	266,014 46.2	0.70	328	468	160 -65.74%	555	775	372 -51.97%
7 Major Collector	255,196 36.9	137,055 43.2	0.54	172	335	84 -74.98%	304	515	206 -59.95%
8 Minor Collector	182,420 39.8	74,321 41.1	0.41	95	229	46 -79.95%	162	415	110 -73.56%
9 Local	658,111 32.4	311,359 31.7	0.47	780	1,646	312 -81.07%	665	1,500	442 -70.57%
Subtotal (kg) (tons)	3,448,396	2,044,246		2865 3.16	4980 5.49	1345 1.48	4961 5.47	7569 8.34	3410 3.76
Small Urban									
11 Interstate									
12 Other Fwy/Ex	68,571 60.0				80			158	
14 Prin. Arterial	204,535 39.1				265			372	
16 Minor Arterial	71,995 30.4				103			132	
17 Collector	65,362 20.5				109			129	
19 Local	108,378 27.1				274			207	
Subtotal (kg) (tons)	518,841				831 0.92			997 1.10	
Urban									
11 Interstate	2,719,955 54.3	5,076,363 33.2	1.87	7,242	3,105	3,389 9.14%	14,905	9,884	10,570 6.94%
12 Other Fwy/Ex	999,408 49.0	1,738,910 45.3	1.74	2,202	1,221	1,070 -12.39%	4,127	2,212	2,824 27.64%
14 Prin. Arterial	4,177,909 43.0	4,352,141 42.3	1.04	5,607	5,236	2,683 -48.76%	8,189	7,797	5,335 -31.57%
16 Minor Arterial	2,234,307 33.1	3,922,291 32.9	1.76	5,507	3,084	2,554 -17.20%	7,142	4,153	4,600 10.77%
17 Collector	1,520,394 30.5	2,197,482 29.4	1.45	3,206	2,161	1,471 -31.92%	4,034	2,835	2,600 -8.28%
19 Local	1,221,819 29.2	2,091,329 25.2	1.71	5,265	3,091	2,063 -33.25%	3,939	2,321	2,538 9.35%
Subtotal (kg) (tons)	12,873,792	19,378,516		29028 32.00	17899 19.73	13230 14.58	42336 46.67	29202 32.19	28467 31.38
Totals (kg) (tons)	16,841,028	21,422,762		31893 35.16	23709 26.13	14575 16.07	47297 52.14	37769 41.63	31878 35.14

VMT, VOC and NOx INVENTORY AND FORECAST
2005 Emissions by County by Functional Class

	VMT			VOC (kg/day)			Nox (kg/day)		
	1990 VMT Speed	2005 VMT Speed	Growth from 1990	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)
PHILADELPHIA County									
Urban									
11 Interstate	4,230,619 30.6	4,968,515 24.3	1.17	11,569	7,457	5,994 -19.61%	15,477	14,763	11,449 -22.45%
12 Other Fwy/Ex	409,034 50.2	496,332 52.9	1.21	831	600	479 -20.21%	1,249	938	902 -3.80%
14 Prin. Arterial	6,332,654 12.8	5,892,614 19.1	0.93	14,828	18,661	7,527 -59.67%	12,783	14,372	8,916 -37.96%
16 Minor Arterial	2,726,898 18.3	3,193,724 16.4	1.17	8,888	6,070	4,414 -27.26%	7,096	5,678	4,949 -12.84%
17 Collector	1,218,117 14.2	1,623,740 11.3	1.33	5,901	3,036	2,770 -8.78%	3,849	2,709	2,690 -0.67%
19 Local	1,569,997 15.5	2,040,923 5.6	1.30	6,899	4,713	3,244 -31.16%	4,234	3,185	2,905 -8.80%
Subtotal (kg) (tons)	16,487,319	18,215,848		48914 53.92	40536 44.68	24427 26 .93	44688 49 .26	41644 45 .90	31811 35 .06
Totals (kg) (tons)	16,487,319	18,215,848		48914 53.92	40536 44.68	24427 26 .93	44688 49 .26	41644 45 .90	31811 35 .06

VMT, VOC and NOx INVENTORY AND FORECAST
2005 Emissions by County by Functional Class

	VMT			VOC (kg/day)			Nox (kg/day)		
	1990 VMT Speed	2005 VMT Speed	Growth from 1990	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)	2005 Baseline	2005 Adjusted Baseline	2005 Control Strategy (from '05 Adjbase)
Area Total									
Rural									
1 Interstate	926,720	1,236,416	1.33	1,528	994.80	829 -16.67%	5,368	3,951 .90	4,030 1.97%
2 Other Prin. Arter	5,175,501	3,777,929	0.73	5,018	6,017	2,635 -56.21%	9,571	12,814	6,764 -47.22%
6 Minor Arterial	1,599,291	1,505,139	0.94	2,114	1,960	1,093 -44.22%	3,415	3,408	2,381 -30.13%
7 Major Collector	1,588,288	1,278,800	0.81	1,848	2,033	947 -53.43%	2,775	3,256	1,922 -40.99%
8 Minor Collector	1,022,703	857,964	0.84	1,269	1,373	653 -52.45%	1,947	2,246	1,362 -39.35%
9 Local	2,641,521	1,447,990	0.55	4,020	6,657	1,706 -74.37%	3,286	5,983	2,247 -62.44%
Subtotal (kg) (tons)	12,954,024	10,104,238		15797 17.41	19035 20.98	7862 8 .67	26362 29 .06	31659 34 .90	18706 20 .62
Small Urban									
11 Interstate									
12 Other Fwy/Ex	122,363				142	0 .00		294	
14 Prin. Arterial	448,587	255,490	0.57	412	591	211 -64.32%	526	871	362 -58.40%
16 Minor Arterial	84,139	47,599	0.57	84	121	41 -65.92%	94	155	63 -59.07%
17 Collector	97,972	132,755	1.36	238	159	117 -26.51%	283	194	195 0.26%
19 Local	186,250	41,881	0.22	123	481	53 -88.97%	89	362	61 -83.15%
Subtotal (kg) (tons)	939,311	477,725		856 0.94	1494 1.65	422 0 .47	992 1 .09	1875 2 .07	681 0 .75
Urban									
11 Interstate	9,946,233	16,347,460	1.64	28,264	14,117	14,358 1.70%	51,123	34,894	37,316 6.94%
12 Other Fwy/Ex	4,281,968	5,887,954	1.38	8,216	5,201	4,273 -17.85%	14,406	10,424	10,147 -2.66%
14 Prin. Arterial	18,859,254	18,665,409	0.99	33,048	34,717	16,770 -51.70%	38,949	39,075	26,711 -31.64%
16 Minor Arterial	7,902,798	12,703,643	1.61	23,580	13,179	11,581 -12.12%	25,257	15,385	17,053 10.85%
17 Collector	4,893,268	7,503,893	1.53	15,577	8,390	7,422 -11.54%	15,403	9,631	10,438 8.38%
19 Local	4,831,150	7,579,807	1.57	22,201	13,051	9,601 -26.43%	15,270	9,455	10,247 8.38%
Subtotal (kg) (tons)	50,714,671	68,688,166		130886 144.28	88657 97.73	64005 70 .55	160408 178 .82	118864 131 .02	111914 123 .36
Totals (kg) (tons)	64,608,006	79,270,129		147539 162.63	109186 120.36	72289 79 .69	187761 206 .97	152398 167 .99	131301 144 .73

Appendix F

VMT, VOC, CO and NOx Inventory and Forecast; Emissions by County by Vehicle Type

VMT, VOC, CO, AND NOx INVENTORY AND FORECAST BY COUNTY BY VEHICL ETYPE
Philadelphia 5 - County Area

1990 Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Bucks	LDGV	8,171,584	63.6%		21873	56.1%	270320	55.3%	17472	38.5%
	LDGT1	544,356	4.2%		2051	5.3%	26923	5.5%	1266	2.8%
	LDGT2	1,810,134	14.1%		6817	17.5%	89534	18.3%	4212	9.3%
	LDGT3	740,749	5.8%		2976	7.6%	38313	7.8%	1759	3.9%
	LDGT4	339,355	2.6%		1364	3.5%	17555	3.6%	806	1.8%
	HDGV2B	253,384	2.0%		1192	3.1%	21541	4.4%	1616	3.6%
	HDGV3	15,503	0.1%		129	0.3%	2720	0.6%	146	0.3%
	HDGV4	12,820	0.1%		87	0.2%	1728	0.4%	121	0.3%
	HDGV5	13,394	0.1%		77	0.2%	1550	0.3%	127	0.3%
	HDGV6	29,151	0.2%		205	0.5%	4118	0.8%	286	0.6%
	HDGV7	19,102	0.1%		192	0.5%	4040	0.8%	229	0.5%
	HDGV8A	110	0.0%		1	0.0%	29	0.0%	2	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	9,928	0.1%		83	0.2%	1506	0.3%	83	0.2%
	LDDV	130,147	1.0%		72	0.2%	172	0.0%	255	0.6%
	LDDT12	49,653	0.4%		76	0.2%	130	0.0%	155	0.3%
	LDDT34	13,478	0.1%		8	0.0%	16	0.0%	27	0.1%
	HDDV2B	64,594	0.5%		35	0.1%	174	0.0%	540	1.2%
	HDDV3	17,918	0.1%		16	0.0%	78	0.0%	243	0.5%
	HDDV4	5,870	0.0%		5	0.0%	21	0.0%	72	0.2%
	HDDV5	1,336	0.0%		1	0.0%	4	0.0%	16	0.0%
	HDDV6	30,256	0.2%		35	0.1%	173	0.0%	539	1.2%
	HDDV7	57,258	0.4%		79	0.2%	384	0.1%	1197	2.6%
	HDDV8A	91,752	0.7%		196	0.5%	989	0.2%	2801	6.2%
	HDDV8B	321,160	2.5%		827	2.1%	4252	0.9%	10934	24.1%
	HDDBT	6,238	0.0%		15	0.0%	65	0.0%	219	0.5%
	HDDBS	4,804	0.0%		5	0.0%	22	0.0%	83	0.2%
	MC	96,983	0.8%		563	1.4%	2228	0.5%	132	0.3%
	Total	12,851,017		25.40	38980		488585		45338	
				Total Tons:	42.97		538.57		49.98	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Chester	LDGV	6,386,080	62.9%		15133	56.8%	190966	55.3%	12617	34.6%
	LDGT1	426,993	4.2%		1157	4.3%	16614	4.8%	838	2.3%
	LDGT2	1,420,106	14.0%		3847	14.4%	55258	16.0%	2788	7.7%
	LDGT3	576,323	5.7%		2137	8.0%	28263	8.2%	1314	3.6%
	LDGT4	264,883	2.6%		981	3.7%	12993	3.8%	604	1.7%
	HDGV2B	228,076	2.2%		1039	3.9%	19388	5.6%	1468	4.0%
	HDGV3	14,244	0.1%		114	0.4%	2502	0.7%	136	0.4%
	HDGV4	10,620	0.1%		73	0.3%	1470	0.4%	100	0.3%
	HDGV5	12,265	0.1%		67	0.3%	1401	0.4%	118	0.3%
	HDGV6	27,215	0.3%		186	0.7%	3861	1.1%	269	0.7%
	HDGV7	16,926	0.2%		163	0.6%	3551	1.0%	204	0.6%
	HDGV8A	93	0.0%		1	0.0%	25	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	9,980	0.1%		88	0.3%	1599	0.5%	83	0.2%
	LDDV	92,740	0.9%		50	0.2%	122	0.0%	184	0.5%
	LDDT12	28,610	0.3%		37	0.1%	64	0.0%	84	0.2%
	LDDT34	10,705	0.1%		7	0.0%	13	0.0%	22	0.1%
	HDDV2B	58,543	0.6%		31	0.1%	158	0.0%	503	1.4%
	HDDV3	16,816	0.2%		15	0.1%	72	0.0%	234	0.6%
	HDDV4	4,977	0.0%		4	0.0%	18	0.0%	62	0.2%
	HDDV5	1,260	0.0%		1	0.0%	4	0.0%	15	0.0%
	HDDV6	28,411	0.3%		32	0.1%	162	0.0%	523	1.4%
	HDDV7	51,295	0.5%		70	0.3%	340	0.1%	1105	3.0%
	HDDV8A	80,492	0.8%		168	0.6%	861	0.2%	2521	6.9%
	HDDV8B	291,062	2.9%		735	2.8%	3850	1.1%	10149	27.9%
	HDDBT	8,685	0.1%		21	0.1%	87	0.0%	285	0.8%
	HDDBS	4,934	0.0%		5	0.0%	25	0.0%	88	0.2%
	MC	76,699	0.8%		468	1.8%	1850	0.5%	107	0.3%
	Total	10,149,033		27.30	26630		345516		36421	
				Total Tons:	29.35		380.87		40.15	

VMT, VOC, CO, AND NOx INVENTORY AND FORECAST BY COUNTY BY VEHICL ETYPE
Philadelphia 5 - County Area

1990 Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Delaware	LDGV	5,309,329	64.1%		13295	56.7%	159519	55.7%	10782	40.2%
	LDGT1	353,342	4.3%		1257	5.4%	16203	5.7%	788	2.9%
	LDGT2	1,175,079	14.2%		4182	17.8%	53882	18.8%	2622	9.8%
	LDGT3	479,697	5.8%		1681	7.2%	21606	7.5%	1045	3.9%
	LDGT4	218,357	2.6%		764	3.3%	9836	3.4%	475	1.8%
	HDGV2B	148,930	1.8%		658	2.8%	11646	4.1%	937	3.5%
	HDGV3	8,689	0.1%		70	0.3%	1423	0.5%	80	0.3%
	HDGV4	7,311	0.1%		46	0.2%	915	0.3%	69	0.3%
	HDGV5	8,734	0.1%		49	0.2%	946	0.3%	81	0.3%
	HDGV6	17,448	0.2%		113	0.5%	2245	0.8%	169	0.6%
	HDGV7	11,124	0.1%		103	0.4%	2141	0.7%	131	0.5%
	HDGV8A	62	0.0%		1	0.0%	15	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	6,413	0.1%		52	0.2%	913	0.3%	53	0.2%
	LDDV	76,872	0.9%		43	0.2%	100	0.0%	140	0.5%
	LDDT12	29,846	0.4%		46	0.2%	76	0.0%	86	0.3%
	LDDT34	8,470	0.1%		5	0.0%	10	0.0%	15	0.1%
	HDDV2B	38,577	0.5%		20	0.1%	98	0.0%	304	1.1%
	HDDV3	10,427	0.1%		9	0.0%	43	0.0%	131	0.5%
	HDDV4	3,505	0.0%		3	0.0%	11	0.0%	41	0.2%
	HDDV5	920	0.0%		1	0.0%	2	0.0%	10	0.0%
	HDDV6	18,412	0.2%		21	0.1%	98	0.0%	310	1.2%
	HDDV7	34,123	0.4%		46	0.2%	213	0.1%	671	2.5%
	HDDV8A	54,837	0.7%		114	0.5%	553	0.2%	1571	5.9%
	HDDV8B	189,505	2.3%		474	2.0%	2357	0.8%	6079	22.7%
	HDDBT	1,635	0.0%		4	0.0%	16	0.0%	63	0.2%
	HDDBS	3,244	0.0%		3	0.0%	14	0.0%	53	0.2%
	MC	64,728	0.8%		373	1.6%	1418	0.5%	85	0.3%
	Total	8,279,616		22.10	23430		286300		26790	
				Total Tons:	25.83		315.59		29.53	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Montgomery	LDGV	10,775,280	64.0%		25704	55.3%	317909	54.5%	21357	38.4%
	LDGT1	714,615	4.2%		2538	5.5%	33354	5.7%	1605	2.9%
	LDGT2	2,383,949	14.2%		8465	18.2%	111257	19.1%	5356	9.6%
	LDGT3	973,650	5.8%		3504	7.5%	46011	7.9%	2182	3.9%
	LDGT4	447,039	2.7%		1608	3.5%	21126	3.6%	1002	1.8%
	HDGV2B	309,950	1.8%		1355	2.9%	24834	4.3%	1970	3.5%
	HDGV3	19,208	0.1%		150	0.3%	3192	0.5%	181	0.3%
	HDGV4	15,678	0.1%		99	0.2%	2016	0.3%	148	0.3%
	HDGV5	17,907	0.1%		97	0.2%	1941	0.3%	169	0.3%
	HDGV6	35,549	0.2%		231	0.5%	4716	0.8%	346	0.6%
	HDGV7	22,147	0.1%		203	0.4%	4354	0.7%	263	0.5%
	HDGV8A	124	0.0%		2	0.0%	32	0.0%	2	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	13,388	0.1%		111	0.2%	1961	0.3%	110	0.2%
	LDDV	155,651	0.9%		85	0.2%	202	0.0%	295	0.5%
	LDDT12	61,710	0.4%		93	0.2%	158	0.0%	186	0.3%
	LDDT34	17,878	0.1%		11	0.0%	22	0.0%	34	0.1%
	HDDV2B	81,688	0.5%		43	0.1%	217	0.0%	680	1.2%
	HDDV3	23,479	0.1%		21	0.0%	100	0.0%	313	0.6%
	HDDV4	7,438	0.0%		6	0.0%	26	0.0%	91	0.2%
	HDDV5	1,837	0.0%		1	0.0%	5	0.0%	21	0.0%
	HDDV6	38,003	0.2%		44	0.1%	213	0.0%	674	1.2%
	HDDV7	69,569	0.4%		95	0.2%	453	0.1%	1444	2.6%
	HDDV8A	111,149	0.7%		230	0.5%	1163	0.2%	3335	6.0%
	HDDV8B	399,785	2.4%		992	2.1%	5173	0.9%	13384	24.0%
	HDDBT	6,168	0.0%		14	0.0%	62	0.0%	216	0.4%
	HDDBS	7,019	0.0%		8	0.0%	33	0.0%	117	0.2%
	MC	131,165	0.8%		772	1.7%	2977	0.5%	178	0.3%
	Total	16,841,023		25.60	46482		583504		55658	
				Total Tons:	51.24		643.20		61.35	

VMT, VOC, CO, AND NOx INVENTORY AND FORECAST BY COUNTY BY VEHICL ETYPE
Philadelphia 5 - County Area

1990 Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Philadelphia	LDGV	10,431,193	63.3%		47667	58.0%	469155	56.7%	28582	43.8%
	LDGT1	690,469	4.2%		4359	5.3%	45050	5.4%	1945	3.0%
	LDGT2	2,302,103	14.0%		14526	17.7%	150174	18.1%	6486	9.9%
	LDGT3	946,063	5.7%		5676	6.9%	58240	7.0%	2528	3.9%
	LDGT4	431,472	2.6%		2587	3.1%	26570	3.2%	1153	1.8%
	HDGV2B	339,720	2.1%		2497	3.0%	36410	4.4%	2015	3.1%
	HDGV3	22,466	0.1%		281	0.3%	4817	0.6%	199	0.3%
	HDGV4	17,440	0.1%		174	0.2%	2890	0.3%	156	0.2%
	HDGV5	18,900	0.1%		176	0.2%	2843	0.3%	165	0.3%
	HDGV6	40,749	0.2%		431	0.5%	7200	0.9%	375	0.6%
	HDGV7	26,497	0.2%		392	0.5%	6913	0.8%	299	0.5%
	HDGV8A	161	0.0%		3	0.0%	52	0.0%	2	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	14,424	0.1%		184	0.2%	2709	0.3%	111	0.2%
	LDDV	192,996	1.2%		140	0.2%	318	0.0%	356	0.5%
	LDDT12	78,256	0.5%		162	0.2%	269	0.0%	240	0.4%
	LDDT34	16,136	0.1%		13	0.0%	25	0.0%	29	0.0%
	HDDV2B	82,659	0.5%		55	0.1%	273	0.0%	637	1.0%
	HDDV3	23,199	0.1%		26	0.0%	122	0.0%	286	0.4%
	HDDV4	7,511	0.0%		7	0.0%	31	0.0%	85	0.1%
	HDDV5	1,819	0.0%		2	0.0%	7	0.0%	19	0.0%
	HDDV6	40,432	0.2%		58	0.1%	282	0.0%	667	1.0%
	HDDV7	75,398	0.5%		131	0.2%	618	0.1%	1456	2.2%
	HDDV8A	122,457	0.7%		331	0.4%	1632	0.2%	3466	5.3%
	HDDV8B	426,608	2.6%		1395	1.7%	6999	0.8%	13598	20.8%
	HDDBT	4,230	0.0%		10	0.0%	41	0.0%	143	0.2%
	HDDBS	6,294	0.0%		9	0.0%	37	0.0%	99	0.2%
	MC	127,668	0.8%		863	1.1%	3882	0.5%	158	0.2%
	Total	16,487,320		10.70	82155		827556		65253	
				Total Tons:	90.56		912.22		71.93	

		VMT		Speed	VOC		CO		NOX	
		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Area Total	LDGV	41,073,466	63.6%		123672	56.8%	1407869	55.6%	90810	39.6%
	LDGT1	2,729,775	4.2%		11362	5.2%	138145	5.5%	6444	2.8%
	LDGT2	9,091,371	14.1%		37838	17.4%	460104	18.2%	21463	9.4%
	LDGT3	3,716,482	5.8%		15973	7.3%	192433	7.6%	8828	3.8%
	LDGT4	1,701,106	2.6%		7304	3.4%	88080	3.5%	4041	1.8%
	HDGV2B	1,280,060	2.0%		6740	3.1%	113819	4.5%	8006	3.5%
	HDGV3	80,110	0.1%		744	0.3%	14654	0.6%	742	0.3%
	HDGV4	63,869	0.1%		480	0.2%	9020	0.4%	594	0.3%
	HDGV5	71,200	0.1%		467	0.2%	8680	0.3%	660	0.3%
	HDGV6	150,112	0.2%		1165	0.5%	22140	0.9%	1445	0.6%
	HDGV7	95,796	0.1%		1052	0.5%	20999	0.8%	1125	0.5%
	HDGV8A	550	0.0%		8	0.0%	153	0.0%	7	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	54,133	0.1%		519	0.2%	8688	0.3%	440	0.2%
	LDDV	648,406	1.0%		390	0.2%	914	0.0%	1229	0.5%
	LDDT12	248,075	0.4%		414	0.2%	697	0.0%	751	0.3%
	LDDT34	66,667	0.1%		45	0.0%	86	0.0%	127	0.1%
	HDDV2B	326,061	0.5%		185	0.1%	919	0.0%	2664	1.2%
	HDDV3	91,839	0.1%		87	0.0%	414	0.0%	1207	0.5%
	HDDV4	29,301	0.0%		25	0.0%	106	0.0%	350	0.2%
	HDDV5	7,172	0.0%		6	0.0%	21	0.0%	80	0.0%
	HDDV6	155,514	0.2%		190	0.1%	927	0.0%	2713	1.2%
	HDDV7	287,643	0.4%		420	0.2%	2008	0.1%	5873	2.6%
	HDDV8A	460,687	0.7%		1037	0.5%	5197	0.2%	13693	6.0%
	HDDV8B	1,628,120	2.5%		4423	2.0%	22631	0.9%	54144	23.6%
	HDDBT	26,956	0.0%		63	0.0%	271	0.0%	926	0.4%
	HDDBS	26,295	0.0%		30	0.0%	131	0.0%	439	0.2%
	MC	497,243	0.8%		3040	1.4%	12355	0.5%	660	0.3%
	Total	64,608,009			217676		2531460		229460	
				Total Tons:	239.95		2790.45		252.94	

VMT, VOC, CO, AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Uncontrolled Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
BUCK	LDGV	6,815,021	44.4%		10253	40.2%	126393	39.8%	9606	26.0%
	LDGT1	1,194,979	7.8%		2415	9.5%	31413	9.9%	2040	5.5%
	LDGT2	3,981,904	26.0%		8045	31.6%	104681	33.0%	6799	18.4%
	LDGT3	1,250,069	8.1%		2047	8.0%	29025	9.1%	1909	5.2%
	LDGT4	576,775	3.8%		945	3.7%	13391	4.2%	881	2.4%
	HDGV2B	273,451	1.8%		438	1.7%	4509	1.4%	1451	3.9%
	HDGV3	9,522	0.1%		29	0.1%	356	0.1%	63	0.2%
	HDGV4	9,462	0.1%		34	0.1%	327	0.1%	63	0.2%
	HDGV5	13,806	0.1%		33	0.1%	338	0.1%	93	0.3%
	HDGV6	31,037	0.2%		85	0.3%	923	0.3%	213	0.6%
	HDGV7	15,593	0.1%		66	0.3%	834	0.3%	129	0.4%
	HDGV8A	73	0.0%		0	0.0%	7	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	7,887	0.1%		38	0.2%	575	0.2%	73	0.2%
	LDDV	9,433	0.1%		5	0.0%	12	0.0%	14	0.0%
	LDDT12	226,031	1.5%		136	0.5%	271	0.1%	359	1.0%
	LDDT34	39,533	0.3%		24	0.1%	46	0.0%	59	0.2%
	HDDV2B	100,741	0.7%		31	0.1%	31	0.0%	599	1.6%
	HDDV3	27,383	0.2%		10	0.0%	10	0.0%	184	0.5%
	HDDV4	21,665	0.1%		9	0.0%	10	0.0%	175	0.5%
	HDDV5	7,398	0.0%		3	0.0%	3	0.0%	65	0.2%
	HDDV6	53,704	0.4%		26	0.1%	99	0.0%	605	1.6%
	HDDV7	81,418	0.5%		49	0.2%	189	0.1%	1132	3.1%
	HDDV8A	106,489	0.7%		61	0.2%	431	0.1%	1947	5.3%
	HDDV8B	379,221	2.5%		245	1.0%	1876	0.6%	7939	21.5%
	HDDBT	8,270	0.1%		8	0.0%	73	0.0%	182	0.5%
	HDDBS	10,367	0.1%		7	0.0%	25	0.0%	164	0.4%
	MC	91,704	0.6%		454	1.8%	1814	0.6%	132	0.4%
	Total	15,342,936	100.0%		25496	100.0%	317659	100.0%	36876	100.0%
				Total Tons:	28.10		350.16		40.65	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
CHES	LDGV	5,692,439	44.0%		8208	40.0%	103058	39.9%	7816	24.1%
	LDGT1	971,247	7.5%		1903	9.3%	25141	9.7%	1636	5.0%
	LDGT2	3,226,662	24.9%		6322	30.8%	83520	32.3%	5434	16.7%
	LDGT3	1,045,625	8.1%		1649	8.0%	23765	9.2%	1576	4.9%
	LDGT4	481,416	3.7%		759	3.7%	10943	4.2%	725	2.2%
	HDGV2B	255,905	2.0%		401	2.0%	4262	1.6%	1372	4.2%
	HDGV3	8,831	0.1%		27	0.1%	339	0.1%	59	0.2%
	HDGV4	9,052	0.1%		32	0.2%	313	0.1%	61	0.2%
	HDGV5	12,534	0.1%		30	0.1%	316	0.1%	85	0.3%
	HDGV6	28,763	0.2%		77	0.4%	856	0.3%	200	0.6%
	HDGV7	14,588	0.1%		60	0.3%	783	0.3%	123	0.4%
	HDGV8A	78	0.0%		1	0.0%	7	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	7,509	0.1%		36	0.2%	542	0.2%	70	0.2%
	LDDV	4,623	0.0%		2	0.0%	6	0.0%	7	0.0%
	LDDT12	317,755	2.5%		169	0.8%	351	0.1%	484	1.5%
	LDDT34	35,651	0.3%		22	0.1%	43	0.0%	55	0.2%
	HDDV2B	94,281	0.7%		29	0.1%	29	0.0%	578	1.8%
	HDDV3	25,391	0.2%		9	0.0%	9	0.0%	177	0.5%
	HDDV4	20,714	0.2%		9	0.0%	9	0.0%	171	0.5%
	HDDV5	6,716	0.1%		3	0.0%	3	0.0%	60	0.2%
	HDDV6	49,777	0.4%		23	0.1%	90	0.0%	578	1.8%
	HDDV7	76,137	0.6%		45	0.2%	175	0.1%	1101	3.4%
	HDDV8A	102,393	0.8%		57	0.3%	411	0.2%	1934	6.0%
	HDDV8B	355,502	2.7%		226	1.1%	1758	0.7%	7684	23.7%
	HDDBT	8,084	0.1%		7	0.0%	60	0.0%	188	0.6%
	HDDBS	9,870	0.1%		7	0.0%	24	0.0%	158	0.5%
	MC	76,355	0.6%		408	2.0%	1559	0.6%	112	0.3%
	Total	12,937,898	100.0%		20518	100.0%	258371	100.0%	32442	100.0%
				Total Tons:	22.62		284.81		35.76	

VMT, VOC, CO, AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Uncontrolled Baseline

VMT, VOC, CO, AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Uncontrolled Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
DELA	LDGV	5,083,769	44.8%		8419	40.6%	90720	39.3%	7185	27.2%
	LDGT1	895,351	7.9%		1988	9.6%	23191	10.1%	1547	5.8%
	LDGT2	2,980,691	26.3%		6621	32.0%	77195	33.5%	5150	19.5%
	LDGT3	936,525	8.3%		1591	7.7%	20594	8.9%	1415	5.3%
	LDGT4	429,233	3.8%		730	3.5%	9437	4.1%	648	2.4%
	HDGV2B	186,243	1.6%		342	1.7%	3250	1.4%	967	3.7%
	HDGV3	6,758	0.1%		23	0.1%	272	0.1%	44	0.2%
	HDGV4	6,590	0.1%		25	0.1%	230	0.1%	44	0.2%
	HDGV5	9,604	0.1%		26	0.1%	252	0.1%	63	0.2%
	HDGV6	20,434	0.2%		63	0.3%	649	0.3%	137	0.5%
	HDGV7	10,673	0.1%		49	0.2%	596	0.3%	87	0.3%
	HDGV8A	54	0.0%		1	0.0%	6	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	6,374	0.1%		36	0.2%	495	0.2%	57	0.2%
	LDDV	3,589	0.0%		2	0.0%	5	0.0%	5	0.0%
	LDDT12	142,719	1.3%		97	0.5%	188	0.1%	225	0.9%
	LDDT34	20,327	0.2%		13	0.1%	25	0.0%	29	0.1%
	HDDV2B	68,610	0.6%		23	0.1%	23	0.0%	399	1.5%
	HDDV3	19,438	0.2%		8	0.0%	8	0.0%	127	0.5%
	HDDV4	15,084	0.1%		7	0.0%	7	0.0%	119	0.5%
	HDDV5	5,146	0.0%		3	0.0%	3	0.0%	44	0.2%
	HDDV6	35,357	0.3%		19	0.1%	70	0.0%	390	1.5%
	HDDV7	55,697	0.5%		36	0.2%	136	0.1%	770	2.9%
	HDDV8A	73,868	0.7%		46	0.2%	320	0.1%	1326	5.0%
	HDDV8B	258,635	2.3%		180	0.9%	1369	0.6%	5370	20.3%
	HDDBT	3,435	0.0%		3	0.0%	26	0.0%	85	0.3%
	HDDBS	8,373	0.1%		6	0.0%	22	0.0%	128	0.5%
	MC	68,103	0.6%		364	1.8%	1478	0.6%	96	0.4%
	Total	11,350,680	100.0%		20719	100.0%	230565	100.0%	26456	100.0%
				Total Tons:	22.84		254.15		29.16	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
MONT	LDGV	9,602,329	44.8%		13143	41.2%	156019	40.2%	12265	25.9%
	LDGT1	1,641,364	7.7%		2919	9.2%	37543	9.7%	2551	5.4%
	LDGT2	5,480,304	25.6%		9747	30.6%	125335	32.3%	8518	18.0%
	LDGT3	1,759,836	8.2%		2496	7.8%	35657	9.2%	2478	5.2%
	LDGT4	803,499	3.8%		1140	3.6%	16282	4.2%	1132	2.4%
	HDGV2B	341,987	1.6%		611	1.9%	6039	1.6%	1790	3.8%
	HDGV3	12,701	0.1%		42	0.1%	507	0.1%	83	0.2%
	HDGV4	10,972	0.1%		42	0.1%	402	0.1%	73	0.2%
	HDGV5	18,081	0.1%		48	0.1%	479	0.1%	120	0.3%
	HDGV6	39,057	0.2%		117	0.4%	1238	0.3%	265	0.6%
	HDGV7	20,156	0.1%		92	0.3%	1161	0.3%	166	0.3%
	HDGV8A	103	0.0%		1	0.0%	11	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	11,638	0.1%		64	0.2%	905	0.2%	105	0.2%
	LDDV	8,387	0.0%		5	0.0%	11	0.0%	12	0.0%
	LDDT12	478,155	2.2%		269	0.8%	552	0.1%	730	1.5%
	LDDT34	60,347	0.3%		33	0.1%	68	0.0%	84	0.2%
	HDDV2B	125,995	0.6%		41	0.1%	42	0.0%	756	1.6%
	HDDV3	36,538	0.2%		14	0.0%	14	0.0%	246	0.5%
	HDDV4	25,122	0.1%		11	0.0%	11	0.0%	211	0.4%
	HDDV5	9,688	0.0%		4	0.0%	5	0.0%	86	0.2%
	HDDV6	67,584	0.3%		35	0.1%	133	0.0%	770	1.6%
	HDDV7	105,212	0.5%		68	0.2%	262	0.1%	1502	3.2%
	HDDV8A	135,062	0.6%		82	0.3%	583	0.1%	2514	5.3%
	HDDV8B	478,570	2.2%		330	1.0%	2538	0.7%	10258	21.7%
	HDDBT	6,238	0.0%		5	0.0%	52	0.0%	158	0.3%
	HDDBS	15,304	0.1%		11	0.0%	40	0.0%	241	0.5%
	MC	128,536	0.6%		525	1.6%	2688	0.7%	183	0.4%
	Total	21,422,765	100.0%		31893	100.0%	388575	100.0%	47297	100.0%
				Total Tons:	35.16		428.33		52.14	

VMT, VOC, CO, AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Uncontrolled Baseline

VMT, VOC, CO, AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Uncontrolled Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
PHIL	LDGV	8,123,448	44.6%		20210	41.3%	155704	39.0%	13227	29.6%
	LDGT1	1,388,708	7.6%		4621	9.4%	39172	9.8%	2624	5.9%
	LDGT2	4,621,343	25.4%		15375	31.4%	130371	32.7%	8732	19.5%
	LDGT3	1,496,463	8.2%		4071	8.3%	37882	9.5%	2552	5.7%
	LDGT4	686,615	3.8%		1866	3.8%	17389	4.4%	1171	2.6%
	HDGV2B	305,007	1.7%		777	1.6%	6215	1.6%	1481	3.3%
	HDGV3	11,968	0.1%		56	0.1%	567	0.1%	73	0.2%
	HDGV4	10,500	0.1%		53	0.1%	431	0.1%	65	0.1%
	HDGV5	15,097	0.1%		55	0.1%	466	0.1%	93	0.2%
	HDGV6	34,147	0.2%		139	0.3%	1272	0.3%	214	0.5%
	HDGV7	18,132	0.1%		109	0.2%	1186	0.3%	138	0.3%
	HDGV8A	87	0.0%		1	0.0%	11	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	10,016	0.1%		79	0.2%	918	0.2%	84	0.2%
	LDDV	13,790	0.1%		9	0.0%	21	0.0%	19	0.0%
	LDDT12	439,429	2.4%		336	0.7%	652	0.2%	640	1.4%
	LDDT34	42,391	0.2%		35	0.1%	65	0.0%	58	0.1%
	HDDV2B	112,368	0.6%		46	0.1%	45	0.0%	606	1.4%
	HDDV3	34,402	0.2%		16	0.0%	16	0.0%	212	0.5%
	HDDV4	24,039	0.1%		13	0.0%	13	0.0%	174	0.4%
	HDDV5	8,085	0.0%		5	0.0%	5	0.0%	64	0.1%
	HDDV6	59,086	0.3%		38	0.1%	142	0.0%	609	1.4%
	HDDV7	94,624	0.5%		74	0.2%	278	0.1%	1206	2.7%
	HDDV8A	116,331	0.6%		88	0.2%	616	0.2%	1974	4.4%
	HDDV8B	422,339	2.3%		359	0.7%	2693	0.7%	8239	18.4%
	HDDBT	4,969	0.0%		4	0.0%	41	0.0%	110	0.2%
	HDDBS	13,169	0.1%		12	0.0%	42	0.0%	186	0.4%
	MC	109,296	0.6%		467	1.0%	2702	0.7%	139	0.3%
	Total	18,215,849	100.0%		48913	100.0%	398914	100.0%	44688	100.0%
				Total Tons:	53.92		439.73		49.26	

		VMT		Speed	VOC		CO		NOX	
		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Area Total	LDGV	35,317,006	44.6%		60234	40.8%	631894	39.6%	50098	26.7%
	LDGT1	6,091,649	7.7%		13846	9.4%	156460	9.8%	10398	5.5%
	LDGT2	20,290,904	25.6%		46109	31.3%	521102	32.7%	34633	18.4%
	LDGT3	6,488,518	8.2%		11854	8.0%	146923	9.2%	9930	5.3%
	LDGT4	2,977,538	3.8%		5439	3.7%	67443	4.2%	4557	2.4%
	HDGV2B	1,362,593	1.7%		2569	1.7%	24274	1.5%	7060	3.8%
	HDGV3	49,780	0.1%		177	0.1%	2042	0.1%	323	0.2%
	HDGV4	46,576	0.1%		186	0.1%	1702	0.1%	305	0.2%
	HDGV5	69,122	0.1%		191	0.1%	1850	0.1%	454	0.2%
	HDGV6	153,438	0.2%		482	0.3%	4937	0.3%	1029	0.5%
	HDGV7	79,142	0.1%		375	0.3%	4559	0.3%	643	0.3%
	HDGV8A	395	0.0%		3	0.0%	43	0.0%	3	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	43,424	0.1%		254	0.2%	3435	0.2%	389	0.2%
	LDDV	39,822	0.1%		23	0.0%	56	0.0%	57	0.0%
	LDDT12	1,604,089	2.0%		1008	0.7%	2014	0.1%	2438	1.3%
	LDDT34	198,249	0.3%		126	0.1%	248	0.0%	285	0.2%
	HDDV2B	501,995	0.6%		169	0.1%	170	0.0%	2937	1.6%
	HDDV3	143,152	0.2%		56	0.0%	56	0.0%	947	0.5%
	HDDV4	106,624	0.1%		47	0.0%	50	0.0%	850	0.5%
	HDDV5	37,033	0.0%		18	0.0%	19	0.0%	320	0.2%
	HDDV6	265,508	0.3%		142	0.1%	533	0.0%	2952	1.6%
	HDDV7	413,088	0.5%		271	0.2%	1039	0.1%	5711	3.0%
	HDDV8A	534,143	0.7%		333	0.2%	2359	0.1%	9694	5.2%
	HDDV8B	1,894,267	2.4%		1341	0.9%	10233	0.6%	39489	21.0%
	HDDBT	30,996	0.0%		27	0.0%	251	0.0%	723	0.4%
	HDDBS	57,083	0.1%		43	0.0%	153	0.0%	878	0.5%
	MC	473,994	0.6%		2218	1.5%	10241	0.6%	662	0.4%
	Total	79,270,128	100.0%		147539	100.0%	1594084	100.0%	187760	100.0%
				Total Tons:	162.63		1757.17		206.97	

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Adjusted Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
BUCK	LDGV	8,290,652	64.5%		12014	62.3%	149812	61.6%	11385	37.8%
	LDGT1	555,720	4.3%		950	4.9%	13430	5.5%	897	3.0%
	LDGT2	1,847,916	14.4%		3160	16.4%	44672	18.4%	2985	9.9%
	LDGT3	739,437	5.8%		1258	6.5%	17988	7.4%	1187	3.9%
	LDGT4	338,747	2.6%		576	3.0%	8242	3.4%	544	1.8%
	HDGV2B	242,643	1.9%		388	2.0%	3615	1.5%	1303	4.3%
	HDGV3	9,211	0.1%		18	0.1%	226	0.1%	55	0.2%
	HDGV4	2,335	0.0%		8	0.0%	81	0.0%	15	0.1%
	HDGV5	6,853	0.1%		15	0.1%	143	0.1%	46	0.2%
	HDGV6	16,086	0.1%		34	0.2%	323	0.1%	106	0.4%
	HDGV7	7,425	0.1%		18	0.1%	186	0.1%	54	0.2%
	HDGV8A	19	0.0%		0	0.0%	1	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	1,793	0.0%		10	0.0%	143	0.1%	16	0.1%
	LDDV	11,130	0.1%		7	0.0%	17	0.0%	19	0.1%
	LDDT12	502	0.0%		1	0.0%	2	0.0%	1	0.0%
	LDDT34	15,345	0.1%		10	0.1%	20	0.0%	24	0.1%
	HDDV2B	75,331	0.6%		25	0.1%	38	0.0%	462	1.5%
	HDDV3	24,214	0.2%		9	0.0%	13	0.0%	172	0.6%
	HDDV4	16,351	0.1%		7	0.0%	10	0.0%	135	0.4%
	HDDV5	7,882	0.1%		4	0.0%	4	0.0%	71	0.2%
	HDDV6	43,324	0.3%		23	0.1%	89	0.0%	506	1.7%
	HDDV7	68,933	0.5%		44	0.2%	177	0.1%	991	3.3%
	HDDV8A	91,843	0.7%		52	0.3%	373	0.2%	1732	5.7%
	HDDV8B	321,160	2.5%		204	1.1%	1556	0.6%	6921	23.0%
	HDDBT	6,238	0.0%		6	0.0%	51	0.0%	148	0.5%
	HDDBS	12,944	0.1%		9	0.0%	36	0.0%	209	0.7%
	MC	96,983	0.8%		423	2.2%	2005	0.8%	142	0.5%
	Total	12,851,017	100.0%		19270	100.0%	243253	100.0%	30126	100.0%
				Total Tons:	21.24		268.14		33.21	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
CHES	LDGV	6,470,408	63.8%		8735	63.1%	113580	62.2%	8570	34.4%
	LDGT1	433,538	4.3%		605	4.4%	9480	5.2%	645	2.6%
	LDGT2	1,441,839	14.2%		2012	14.5%	31532	17.3%	2145	8.6%
	LDGT3	575,352	5.7%		928	6.7%	13761	7.5%	908	3.6%
	LDGT4	264,433	2.6%		426	3.1%	6330	3.5%	417	1.7%
	HDGV2B	218,508	2.2%		335	2.4%	3236	1.8%	1180	4.7%
	HDGV3	8,507	0.1%		15	0.1%	202	0.1%	51	0.2%
	HDGV4	1,929	0.0%		7	0.0%	67	0.0%	13	0.1%
	HDGV5	6,276	0.1%		13	0.1%	128	0.1%	42	0.2%
	HDGV6	15,020	0.1%		30	0.2%	301	0.2%	100	0.4%
	HDGV7	6,613	0.1%		15	0.1%	163	0.1%	49	0.2%
	HDGV8A	21	0.0%		0	0.0%	1	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	1,769	0.0%		10	0.1%	146	0.1%	16	0.1%
	LDDV	8,434	0.1%		5	0.0%	13	0.0%	15	0.1%
	LDDT12	334	0.0%		1	0.0%	2	0.0%	1	0.0%
	LDDT34	12,098	0.1%		8	0.1%	15	0.0%	20	0.1%
	HDDV2B	68,110	0.7%		22	0.2%	34	0.0%	430	1.7%
	HDDV3	22,550	0.2%		8	0.1%	12	0.0%	165	0.7%
	HDDV4	13,664	0.1%		6	0.0%	8	0.0%	114	0.5%
	HDDV5	7,253	0.1%		3	0.0%	4	0.0%	67	0.3%
	HDDV6	40,606	0.4%		21	0.1%	84	0.0%	491	2.0%
	HDDV7	61,612	0.6%		39	0.3%	156	0.1%	914	3.7%
	HDDV8A	80,571	0.8%		45	0.3%	325	0.2%	1564	6.3%
	HDDV8B	291,062	2.9%		182	1.3%	1402	0.8%	6446	25.9%
	HDDBT	8,685	0.1%		8	0.1%	68	0.0%	193	0.8%
	HDDBS	13,142	0.1%		10	0.1%	39	0.0%	217	0.9%
	MC	76,699	0.8%		348	2.5%	1656	0.9%	115	0.5%
	Total	10,149,033	100.0%		13837	100.0%	182744	100.0%	24885	100.0%
				Total Tons:	15.25		201.44		27.43	

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Adjusted Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
DELA	LDGV	5,379,858	65.0%		7413	62.7%	89093	61.6%	7095	39.5%
	LDGT1	360,187	4.4%		591	5.0%	8139	5.6%	566	3.1%
	LDGT2	1,197,822	14.5%		1968	16.6%	27060	18.7%	1882	10.5%
	LDGT3	478,666	5.8%		741	6.3%	10533	7.3%	730	4.1%
	LDGT4	217,890	2.6%		337	2.8%	4796	3.3%	332	1.8%
	HDGV2B	142,958	1.7%		214	1.8%	1923	1.3%	754	4.2%
	HDGV3	5,220	0.1%		9	0.1%	111	0.1%	30	0.2%
	HDGV4	1,328	0.0%		4	0.0%	40	0.0%	9	0.0%
	HDGV5	4,473	0.1%		9	0.1%	84	0.1%	29	0.2%
	HDGV6	9,657	0.1%		19	0.2%	172	0.1%	63	0.3%
	HDGV7	4,367	0.1%		10	0.1%	96	0.1%	31	0.2%
	HDGV8A	13	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	1,110	0.0%		6	0.0%	79	0.1%	10	0.1%
	LDDV	6,374	0.1%		4	0.0%	9	0.0%	10	0.1%
	LDDT12	263	0.0%		1	0.0%	1	0.0%	1	0.0%
	LDDT34	9,926	0.1%		6	0.1%	12	0.0%	14	0.1%
	HDDV2B	44,549	0.5%		14	0.1%	21	0.0%	258	1.4%
	HDDV3	13,900	0.2%		5	0.0%	7	0.0%	92	0.5%
	HDDV4	9,490	0.1%		4	0.0%	5	0.0%	76	0.4%
	HDDV5	5,182	0.1%		2	0.0%	3	0.0%	43	0.2%
	HDDV6	26,204	0.3%		13	0.1%	50	0.0%	289	1.6%
	HDDV7	40,876	0.5%		25	0.2%	98	0.1%	553	3.1%
	HDDV8A	54,885	0.7%		31	0.3%	209	0.1%	973	5.4%
	HDDV8B	189,505	2.3%		117	1.0%	861	0.6%	3872	21.5%
	HDDBT	1,635	0.0%		1	0.0%	13	0.0%	43	0.2%
	HDDBS	8,550	0.1%		6	0.1%	23	0.0%	129	0.7%
	MC	64,728	0.8%		281	2.4%	1276	0.9%	91	0.5%
	Total	8,279,616	100.0%		11832	100.0%	144713	100.0%	17975	100.0%
				Total Tons:	13.04		159.52		19.81	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
MONT	LDGV	10,917,189	64.8%		14694	62.0%	185898	61.4%	14406	38.1%
	LDGT1	728,702	4.3%		1194	5.0%	16906	5.6%	1152	3.1%
	LDGT2	2,430,957	14.4%		3981	16.8%	56393	18.6%	3845	10.2%
	LDGT3	971,959	5.8%		1525	6.4%	22381	7.4%	1518	4.0%
	LDGT4	446,264	2.6%		699	2.9%	10279	3.4%	697	1.8%
	HDGV2B	298,637	1.8%		439	1.9%	4128	1.4%	1587	4.2%
	HDGV3	11,649	0.1%		20	0.1%	247	0.1%	67	0.2%
	HDGV4	2,775	0.0%		9	0.0%	83	0.0%	18	0.0%
	HDGV5	9,084	0.1%		18	0.1%	170	0.1%	59	0.2%
	HDGV6	19,713	0.1%		37	0.2%	361	0.1%	128	0.3%
	HDGV7	8,799	0.1%		19	0.1%	196	0.1%	63	0.2%
	HDGV8A	24	0.0%		0	0.0%	1	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	2,246	0.0%		12	0.0%	164	0.1%	20	0.1%
	LDDV	13,806	0.1%		8	0.0%	20	0.0%	22	0.1%
	LDDT12	621	0.0%		1	0.0%	3	0.0%	2	0.0%
	LDDT34	20,278	0.1%		13	0.1%	25	0.0%	31	0.1%
	HDDV2B	93,004	0.6%		30	0.1%	43	0.0%	566	1.5%
	HDDV3	31,038	0.2%		12	0.0%	16	0.0%	216	0.6%
	HDDV4	20,343	0.1%		9	0.0%	12	0.0%	167	0.4%
	HDDV5	10,657	0.1%		5	0.0%	6	0.0%	92	0.2%
	HDDV6	53,843	0.3%		28	0.1%	107	0.0%	626	1.7%
	HDDV7	82,915	0.5%		52	0.2%	203	0.1%	1185	3.1%
	HDDV8A	111,243	0.7%		61	0.3%	433	0.1%	2081	5.5%
	HDDV8B	399,785	2.4%		247	1.0%	1857	0.6%	8602	22.8%
	HDDBT	6,168	0.0%		5	0.0%	48	0.0%	146	0.4%
	HDDBS	18,159	0.1%		14	0.1%	51	0.0%	283	0.7%
	MC	131,165	0.8%		578	2.4%	2673	0.9%	191	0.5%
	Total	16,841,023	100.0%		23709	100.0%	302704	100.0%	37768	100.0%
				Total Tons:	26.13		333.67		41.63	

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Adjusted Baseline

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Adjusted Baseline

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
PHIL	LDGV	10,611,917	64.4%		25944	64.0%	203862	61.4%	17025	40.9%
	LDGT1	708,279	4.3%		2021	5.0%	18324	5.5%	1280	3.1%
	LDGT2	2,361,515	14.3%		6733	16.6%	61096	18.4%	4267	10.2%
	LDGT3	943,856	5.7%		2421	6.0%	23235	7.0%	1633	3.9%
	LDGT4	430,465	2.6%		1103	2.7%	10606	3.2%	745	1.8%
	HDGV2B	321,910	2.0%		816	2.0%	5690	1.7%	1629	3.9%
	HDGV3	12,556	0.1%		36	0.1%	350	0.1%	70	0.2%
	HDGV4	3,193	0.0%		16	0.0%	127	0.0%	20	0.0%
	HDGV5	9,713	0.1%		33	0.1%	249	0.1%	60	0.1%
	HDGV6	22,217	0.1%		70	0.2%	531	0.2%	139	0.3%
	HDGV7	10,065	0.1%		36	0.1%	301	0.1%	69	0.2%
	HDGV8A	42	0.0%		0	0.0%	2	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	2,550	0.0%		20	0.1%	233	0.1%	22	0.1%
	LDDV	12,388	0.1%		9	0.0%	21	0.0%	19	0.0%
	LDDT12	1,023	0.0%		3	0.0%	5	0.0%	3	0.0%
	LDDT34	19,245	0.1%		17	0.0%	31	0.0%	27	0.1%
	HDDV2B	100,469	0.6%		42	0.1%	65	0.0%	570	1.4%
	HDDV3	33,110	0.2%		16	0.0%	24	0.0%	218	0.5%
	HDDV4	21,754	0.1%		12	0.0%	16	0.0%	167	0.4%
	HDDV5	11,006	0.1%		7	0.0%	8	0.0%	89	0.2%
	HDDV6	58,962	0.4%		38	0.1%	150	0.0%	646	1.6%
	HDDV7	91,837	0.6%		73	0.2%	290	0.1%	1233	3.0%
	HDDV8A	122,573	0.7%		87	0.2%	621	0.2%	2222	5.3%
	HDDV8B	426,608	2.6%		338	0.8%	2585	0.8%	8961	21.5%
	HDDBT	4,230	0.0%		4	0.0%	32	0.0%	97	0.2%
	HDDBS	18,169	0.1%		17	0.0%	65	0.0%	266	0.6%
	MC	127,668	0.8%		628	1.5%	3512	1.1%	169	0.4%
	Total	16,487,320	100.0%		40536	100.0%	332029	100.0%	41644	100.0%
				Total Tons:	44.68		366.00		45.90	

		VMT		Speed	VOC		CO		NOX	
		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Area Total	LDGV	41,670,024	64.5%		68800	63.0%	742244	61.6%	58480	38.4%
	LDGT1	2,786,426	4.3%		5361	4.9%	66278	5.5%	4540	3.0%
	LDGT2	9,280,049	14.4%		17853	16.4%	220753	18.3%	15123	9.9%
	LDGT3	3,709,270	5.7%		6872	6.3%	87898	7.3%	5976	3.9%
	LDGT4	1,697,799	2.6%		3142	2.9%	40254	3.3%	2736	1.8%
	HDGV2B	1,224,656	1.9%		2192	2.0%	18592	1.5%	6454	4.2%
	HDGV3	47,143	0.1%		98	0.1%	1136	0.1%	273	0.2%
	HDGV4	11,560	0.0%		43	0.0%	397	0.0%	75	0.0%
	HDGV5	36,399	0.1%		88	0.1%	774	0.1%	237	0.2%
	HDGV6	82,693	0.1%		190	0.2%	1687	0.1%	535	0.4%
	HDGV7	37,269	0.1%		97	0.1%	943	0.1%	267	0.2%
	HDGV8A	119	0.0%		0	0.0%	4	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	9,468	0.0%		57	0.1%	765	0.1%	84	0.1%
	LDDV	52,132	0.1%		32	0.0%	79	0.0%	84	0.1%
	LDDT12	2,743	0.0%		7	0.0%	12	0.0%	7	0.0%
	LDDT34	76,892	0.1%		54	0.0%	103	0.0%	116	0.1%
	HDDV2B	381,463	0.6%		133	0.1%	201	0.0%	2285	1.5%
	HDDV3	124,812	0.2%		50	0.0%	72	0.0%	864	0.6%
	HDDV4	81,602	0.1%		38	0.0%	51	0.0%	659	0.4%
	HDDV5	41,980	0.1%		21	0.0%	25	0.0%	363	0.2%
	HDDV6	222,939	0.3%		122	0.1%	480	0.0%	2559	1.7%
	HDDV7	346,173	0.5%		232	0.2%	923	0.1%	4875	3.2%
	HDDV8A	461,115	0.7%		276	0.3%	1962	0.2%	8572	5.6%
	HDDV8B	1,628,120	2.5%		1088	1.0%	8261	0.7%	34801	22.8%
	HDDBT	26,956	0.0%		23	0.0%	212	0.0%	626	0.4%
	HDDBS	70,964	0.1%		57	0.1%	215	0.0%	1103	0.7%
	MC	497,243	0.8%		2258	2.1%	11123	0.9%	707	0.5%
	Total	64,608,009	100.0%		109184	100.0%	1205444	100.0%	152398	100.0%
				Total Tons:	120.35		1328.77		167.99	

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Control Strategy

county		VMT Miles	VMT Pct.	Speed (mph)	VOC Kilograms	VOC Pct.	CO Kilograms	CO Pct.	NOX Kilograms	NOX Pct.
BUCK	LDGV	6,815,021	44.4%		4727	36.5%	79267	42.3%	5502	21.1%
	LDGT1	1,194,979	7.8%		1218	9.4%	17326	9.2%	1184	4.5%
	LDGT2	3,981,904	26.0%		4152	32.1%	59041	31.5%	4873	18.7%
	LDGT3	1,250,069	8.1%		1057	8.2%	14851	7.9%	1373	5.3%
	LDGT4	576,775	3.8%		509	3.9%	7003	3.7%	828	3.2%
	HDGV2B	273,451	1.8%		273	2.1%	3352	1.8%	1204	4.6%
	HDGV3	9,522	0.1%		21	0.2%	281	0.2%	56	0.2%
	HDGV4	9,462	0.1%		24	0.2%	255	0.1%	57	0.2%
	HDGV5	13,806	0.1%		22	0.2%	255	0.1%	79	0.3%
	HDGV6	31,037	0.2%		59	0.5%	709	0.4%	181	0.7%
	HDGV7	15,593	0.1%		48	0.4%	662	0.4%	115	0.4%
	HDGV8A	73	0.0%		0	0.0%	6	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	7,887	0.1%		30	0.2%	466	0.2%	71	0.3%
	LDDV	9,433	0.1%		4	0.0%	12	0.0%	12	0.0%
	LDDT12	226,031	1.5%		62	0.5%	163	0.1%	153	0.6%
	LDDT34	39,533	0.3%		19	0.1%	36	0.0%	50	0.2%
	HDDV2B	100,741	0.7%		17	0.1%	84	0.0%	429	1.6%
	HDDV3	27,383	0.2%		5	0.0%	27	0.0%	128	0.5%
	HDDV4	21,665	0.1%		5	0.0%	25	0.0%	120	0.5%
	HDDV5	7,398	0.0%		2	0.0%	9	0.0%	42	0.2%
	HDDV6	53,704	0.4%		19	0.1%	71	0.0%	453	1.7%
	HDDV7	81,418	0.5%		36	0.3%	140	0.1%	870	3.3%
	HDDV8A	106,489	0.7%		49	0.4%	302	0.2%	1521	5.8%
	HDDV8B	379,221	2.5%		207	1.6%	1391	0.7%	6339	24.3%
	HDDBT	8,270	0.1%		4	0.0%	38	0.0%	172	0.7%
	HDDBS	10,367	0.1%		5	0.0%	19	0.0%	138	0.5%
	MC	91,704	0.6%		375	2.9%	1544	0.8%	129	0.5%
	Total	15,342,936	100.0%		12946	100.0%	187333	100.0%	26079	100.0%
				Total Tons:	14.27		206.50		28.75	

county		VMT Miles	VMT Pct.	Speed (mph)	VOC Kilograms	VOC Pct.	CO Kilograms	CO Pct.	NOX Kilograms	NOX Pct.
CHES	LDGV	5,692,439	44.0%		3629	35.6%	64971	42.6%	4392	19.1%
	LDGT1	971,247	7.5%		939	9.2%	13828	9.1%	936	4.1%
	LDGT2	3,226,662	24.9%		3195	31.4%	46965	30.8%	3868	16.9%
	LDGT3	1,045,625	8.1%		835	8.2%	12059	7.9%	1126	4.9%
	LDGT4	481,416	3.7%		402	3.9%	5682	3.7%	682	3.0%
	HDGV2B	255,905	2.0%		251	2.5%	3169	2.1%	1139	5.0%
	HDGV3	8,831	0.1%		19	0.2%	268	0.2%	52	0.2%
	HDGV4	9,052	0.1%		23	0.2%	244	0.2%	55	0.2%
	HDGV5	12,534	0.1%		20	0.2%	238	0.2%	72	0.3%
	HDGV6	28,763	0.2%		53	0.5%	657	0.4%	170	0.7%
	HDGV7	14,588	0.1%		44	0.4%	622	0.4%	109	0.5%
	HDGV8A	78	0.0%		0	0.0%	6	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	7,509	0.1%		28	0.3%	441	0.3%	68	0.3%
	LDDV	4,623	0.0%		2	0.0%	6	0.0%	6	0.0%
	LDDT12	317,755	2.5%		64	0.6%	193	0.1%	172	0.7%
	LDDT34	35,651	0.3%		19	0.2%	34	0.0%	48	0.2%
	HDDV2B	94,281	0.7%		16	0.2%	78	0.1%	414	1.8%
	HDDV3	25,391	0.2%		5	0.0%	25	0.0%	123	0.5%
	HDDV4	20,714	0.2%		4	0.0%	24	0.0%	117	0.5%
	HDDV5	6,716	0.1%		2	0.0%	9	0.0%	39	0.2%
	HDDV6	49,777	0.4%		17	0.2%	66	0.0%	433	1.9%
	HDDV7	76,137	0.6%		33	0.3%	130	0.1%	847	3.7%
	HDDV8A	102,393	0.8%		46	0.4%	288	0.2%	1513	6.6%
	HDDV8B	355,502	2.7%		191	1.9%	1303	0.9%	6139	26.8%
	HDDBT	8,084	0.1%		4	0.0%	31	0.0%	177	0.8%
	HDDBS	9,870	0.1%		5	0.1%	18	0.0%	133	0.6%
	MC	76,355	0.6%		338	3.3%	1327	0.9%	109	0.5%
	Total	12,937,898	100.0%		10180	100.0%	152680	100.0%	22939	100.0%
				Total Tons:	11.22		168.30		25.29	

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Control Strategy

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
DELA	LDGV	5,083,769	44.8%		3689	36.3%	56390	41.8%	4067	21.9%
	LDGT1	895,351	7.9%		983	9.7%	12694	9.4%	901	4.8%
	LDGT2	2,980,691	26.3%		3349	33.0%	43307	32.1%	3702	19.9%
	LDGT3	936,525	8.3%		785	7.7%	10406	7.7%	1005	5.4%
	LDGT4	429,233	3.8%		377	3.7%	4884	3.6%	607	3.3%
	HDGV2B	186,243	1.6%		206	2.0%	2413	1.8%	802	4.3%
	HDGV3	6,758	0.1%		17	0.2%	215	0.2%	39	0.2%
	HDGV4	6,590	0.1%		18	0.2%	179	0.1%	39	0.2%
	HDGV5	9,604	0.1%		17	0.2%	190	0.1%	54	0.3%
	HDGV6	20,434	0.2%		43	0.4%	497	0.4%	116	0.6%
	HDGV7	10,673	0.1%		36	0.3%	473	0.4%	78	0.4%
	HDGV8A	54	0.0%		0	0.0%	5	0.0%	0	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	6,374	0.1%		27	0.3%	402	0.3%	56	0.3%
	LDDV	3,589	0.0%		2	0.0%	5	0.0%	4	0.0%
	LDDT12	142,719	1.3%		46	0.5%	115	0.1%	102	0.5%
	LDDT34	20,327	0.2%		11	0.1%	19	0.0%	25	0.1%
	HDDV2B	68,610	0.6%		13	0.1%	61	0.0%	286	1.5%
	HDDV3	19,438	0.2%		4	0.0%	21	0.0%	89	0.5%
	HDDV4	15,084	0.1%		3	0.0%	18	0.0%	82	0.4%
	HDDV5	5,146	0.0%		1	0.0%	7	0.0%	29	0.2%
	HDDV6	35,357	0.3%		13	0.1%	51	0.0%	292	1.6%
	HDDV7	55,697	0.5%		26	0.3%	101	0.1%	592	3.2%
	HDDV8A	73,868	0.7%		37	0.4%	225	0.2%	1040	5.6%
	HDDV8B	258,635	2.3%		152	1.5%	1014	0.8%	4305	23.2%
	HDDBT	3,435	0.0%		1	0.0%	14	0.0%	81	0.4%
	HDDBS	8,373	0.1%		5	0.0%	16	0.0%	108	0.6%
	MC	68,103	0.6%		302	3.0%	1259	0.9%	95	0.5%
	Total	11,350,680	100.0%		10160	100.0%	134977	100.0%	18595	100.0%
				Total Tons:	11.20		148.79		20.50	

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
MONT	LDGV	9,602,329	44.8%		5254	36.1%	95918	43.1%	6395	20.1%
	LDGT1	1,641,364	7.7%		1340	9.2%	19931	9.0%	1333	4.2%
	LDGT2	5,480,304	25.6%		4586	31.5%	67468	30.3%	5515	17.3%
	LDGT3	1,759,836	8.2%		1173	8.1%	17401	7.8%	1686	5.3%
	LDGT4	803,499	3.8%		567	3.9%	8165	3.7%	1035	3.2%
	HDGV2B	341,987	1.6%		371	2.5%	4483	2.0%	1486	4.7%
	HDGV3	12,701	0.1%		30	0.2%	400	0.2%	74	0.2%
	HDGV4	10,972	0.1%		29	0.2%	313	0.1%	66	0.2%
	HDGV5	18,081	0.1%		31	0.2%	361	0.2%	102	0.3%
	HDGV6	39,057	0.2%		79	0.5%	949	0.4%	225	0.7%
	HDGV7	20,156	0.1%		67	0.5%	922	0.4%	147	0.5%
	HDGV8A	103	0.0%		1	0.0%	9	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	11,638	0.1%		48	0.3%	734	0.3%	102	0.3%
	LDDV	8,387	0.0%		4	0.0%	11	0.0%	12	0.0%
	LDDT12	478,155	2.2%		98	0.7%	307	0.1%	264	0.8%
	LDDT34	60,347	0.3%		25	0.2%	48	0.0%	67	0.2%
	HDDV2B	125,995	0.6%		23	0.2%	112	0.1%	542	1.7%
	HDDV3	36,538	0.2%		7	0.0%	38	0.0%	171	0.5%
	HDDV4	25,122	0.1%		6	0.0%	31	0.0%	145	0.5%
	HDDV5	9,688	0.0%		2	0.0%	13	0.0%	56	0.2%
	HDDV6	67,584	0.3%		25	0.2%	96	0.0%	577	1.8%
	HDDV7	105,212	0.5%		49	0.3%	194	0.1%	1156	3.6%
	HDDV8A	135,062	0.6%		66	0.5%	409	0.2%	1972	6.2%
	HDDV8B	478,570	2.2%		278	1.9%	1881	0.8%	8222	25.8%
	HDDBT	6,238	0.0%		3	0.0%	27	0.0%	150	0.5%
	HDDBS	15,304	0.1%		8	0.1%	30	0.0%	202	0.6%
	MC	128,536	0.6%		404	2.8%	2288	1.0%	179	0.6%
	Total	21,422,765	100.0%		14574	100.0%	222538	100.0%	31878	100.0%
				Total Tons:	16.07		245.31		35.14	

VMT, VOC, CO AND NOX INVENTORY AND FORECAST BY COUNTY BY VEHICLE TYPE
Philadelphia 5 - County Area

2005 Control Strategy

		VMT		Speed	VOC		CO		NOX	
county		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
PHIL	LDGV	8,123,448	44.6%		9105	37.3%	93622	40.6%	7961	25.0%
	LDGT1	1,388,708	7.6%		2380	9.7%	21343	9.3%	1614	5.1%
	LDGT2	4,621,343	25.4%		8048	32.9%	72711	31.5%	6374	20.0%
	LDGT3	1,496,463	8.2%		2078	8.5%	19633	8.5%	1899	6.0%
	LDGT4	686,615	3.8%		983	4.0%	9179	4.0%	1107	3.5%
	HDGV2B	305,007	1.7%		441	1.8%	4590	2.0%	1229	3.9%
	HDGV3	11,968	0.1%		38	0.2%	446	0.2%	64	0.2%
	HDGV4	10,500	0.1%		36	0.1%	334	0.1%	58	0.2%
	HDGV5	15,097	0.1%		34	0.1%	349	0.2%	79	0.2%
	HDGV6	34,147	0.2%		90	0.4%	972	0.4%	182	0.6%
	HDGV7	18,132	0.1%		77	0.3%	940	0.4%	123	0.4%
	HDGV8A	87	0.0%		1	0.0%	9	0.0%	1	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	10,016	0.1%		58	0.2%	744	0.3%	81	0.3%
	LDDV	13,790	0.1%		7	0.0%	21	0.0%	17	0.1%
	LDDT12	439,429	2.4%		147	0.6%	385	0.2%	272	0.9%
	LDDT34	42,391	0.2%		29	0.1%	51	0.0%	50	0.2%
	HDDV2B	112,368	0.6%		25	0.1%	120	0.1%	434	1.4%
	HDDV3	34,402	0.2%		8	0.0%	44	0.0%	148	0.5%
	HDDV4	24,039	0.1%		7	0.0%	35	0.0%	119	0.4%
	HDDV5	8,085	0.0%		2	0.0%	13	0.0%	42	0.1%
	HDDV6	59,086	0.3%		27	0.1%	103	0.0%	457	1.4%
	HDDV7	94,624	0.5%		54	0.2%	206	0.1%	928	2.9%
	HDDV8A	116,331	0.6%		71	0.3%	432	0.2%	1552	4.9%
	HDDV8B	422,339	2.3%		303	1.2%	1996	0.9%	6624	20.8%
	HDDBT	4,969	0.0%		2	0.0%	21	0.0%	104	0.3%
	HDDBS	13,169	0.1%		9	0.0%	31	0.0%	156	0.5%
	MC	109,296	0.6%		367	1.5%	2300	1.0%	136	0.4%
	Total	18,215,849	100.0%		24427	100.0%	230630	100.0%	31811	100.0%
				Total Tons:	26.93		254.23		35.07	

		VMT		Speed	VOC		CO		NOX	
		Miles	Pct.	(mph)	Kilograms	Pct.	Kilograms	Pct.	Kilograms	Pct.
Area Total	LDGV	35,317,006	44.6%		26403	36.5%	390168	42.0%	28317	21.6%
	LDGT1	6,091,649	7.7%		6859	9.5%	85123	9.2%	5967	4.5%
	LDGT2	20,290,904	25.6%		23329	32.3%	289490	31.2%	24332	18.5%
	LDGT3	6,488,518	8.2%		5929	8.2%	74350	8.0%	7088	5.4%
	LDGT4	2,977,538	3.8%		2837	3.9%	34911	3.8%	4259	3.2%
	HDGV2B	1,362,593	1.7%		1542	2.1%	18007	1.9%	5861	4.5%
	HDGV3	49,780	0.1%		125	0.2%	1610	0.2%	285	0.2%
	HDGV4	46,576	0.1%		130	0.2%	1326	0.1%	276	0.2%
	HDGV5	69,122	0.1%		125	0.2%	1393	0.2%	385	0.3%
	HDGV6	153,438	0.2%		323	0.4%	3784	0.4%	874	0.7%
	HDGV7	79,142	0.1%		272	0.4%	3619	0.4%	572	0.4%
	HDGV8A	395	0.0%		2	0.0%	35	0.0%	3	0.0%
	HDGV8B	0	0.0%		0	0.0%	0	0.0%	0	0.0%
	HDGB	43,424	0.1%		190	0.3%	2787	0.3%	377	0.3%
	LDDV	39,822	0.1%		18	0.0%	56	0.0%	52	0.0%
	LDDT12	1,604,089	2.0%		416	0.6%	1163	0.1%	962	0.7%
	LDDT34	198,249	0.3%		102	0.1%	189	0.0%	239	0.2%
	HDDV2B	501,995	0.6%		93	0.1%	455	0.0%	2105	1.6%
	HDDV3	143,152	0.2%		29	0.0%	154	0.0%	660	0.5%
	HDDV4	106,624	0.1%		24	0.0%	133	0.0%	582	0.4%
	HDDV5	37,033	0.0%		9	0.0%	51	0.0%	208	0.2%
	HDDV6	265,508	0.3%		101	0.1%	386	0.0%	2211	1.7%
	HDDV7	413,088	0.5%		198	0.3%	770	0.1%	4393	3.3%
	HDDV8A	534,143	0.7%		268	0.4%	1655	0.2%	7598	5.8%
	HDDV8B	1,894,267	2.4%		1129	1.6%	7584	0.8%	31628	24.1%
	HDDBT	30,996	0.0%		14	0.0%	130	0.0%	684	0.5%
	HDDBS	57,083	0.1%		33	0.0%	113	0.0%	736	0.6%
	MC	473,994	0.6%		1787	2.5%	8718	0.9%	648	0.5%
	Total	79,270,128	100.0%		72287	100.0%	928158	100.0%	131301	100.0%
				Total Tons:	79.68		1023.12		144.73	

Appendix G

MOBILE6 Input Files for 1990 Baseline and 2005 Scenario

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Bucks County, 1990 Baseline

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_BUCK90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0091

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 8.4
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : BUCK90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0091]  2
CALENDAR YEAR            :1990
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                            .640  .043  .142  .058  .026  .028  .003  .002
                            .001  .005  .007  .008  .028  .001  .001  .007
VMT BY FACILITY          :V009102F.def
VMT BY HOUR              :V009102H.def
SPEED VMT                :V009102S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0390 0.0730 0.0760 0.0840 0.0900 0.0980 0.0980 0.0920 0.0770 0.0640
    0.0390 0.0290 0.0230 0.0210 0.0240 0.0180 0.0130 0.0080 0.0040 0.0040
    0.0040 0.0040 0.0030 0.0030 0.0120
  2 0.0310 0.0520 0.0560 0.0640 0.0860 0.0940 0.0920 0.1040 0.0740 0.0600
    0.0440 0.0310 0.0280 0.0260 0.0410 0.0320 0.0240 0.0140 0.0080 0.0090
    0.0060 0.0070 0.0050 0.0040 0.0080
  3 0.0310 0.0520 0.0560 0.0640 0.0860 0.0940 0.0920 0.1040 0.0740 0.0600
    0.0440 0.0310 0.0280 0.0260 0.0410 0.0320 0.0240 0.0140 0.0080 0.0090
    0.0060 0.0070 0.0050 0.0040 0.0080
  4 0.0380 0.0590 0.0480 0.0750 0.1040 0.1000 0.0810 0.0930 0.0730 0.0560
    0.0320 0.0230 0.0230 0.0240 0.0390 0.0370 0.0230 0.0140 0.0130 0.0110
    0.0110 0.0070 0.0060 0.0030 0.0070
  5 0.0380 0.0590 0.0480 0.0750 0.1040 0.1000 0.0810 0.0930 0.0730 0.0560
    0.0320 0.0230 0.0230 0.0240 0.0390 0.0370 0.0230 0.0140 0.0130 0.0110
    0.0110 0.0070 0.0060 0.0030 0.0070
  6 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
  7 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
  8 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
  9 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
 10 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
 11 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
 12 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
 13 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
 14 0.0274 0.0468 0.0468 0.0637 0.0794 0.0828 0.0701 0.0680 0.0586 0.0503
    0.0380 0.0419 0.0374 0.0427 0.0450 0.0301 0.0256 0.0228 0.0233 0.0206
    0.0214 0.0155 0.0103 0.0102 0.0212
 15 0.0320 0.0670 0.0670 0.0670 0.0670 0.0730 0.0610 0.0400 0.0410 0.0510
    0.0530 0.0660 0.0550 0.0570 0.0450 0.0190 0.0230 0.0280 0.0240 0.0160
    0.0110 0.0090 0.0070 0.0050 0.0160
 16 0.0370 0.0510 0.0410 0.0470 0.0470 0.0380 0.0500 0.0780 0.0700 0.0450
    0.0640 0.4320 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```

Chester County, 1990 Baseline

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_CHES90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0151

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 8.4
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : CHES90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[01 0151]  1
CALENDAR YEAR            :1990
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                             .581  .039  .130  .052  .024  .055  .006  .003
                             .003  .011  .013  .016  .056  .003  .001  .007
VMT BY FACILITY          :V015101F.def
VMT BY HOUR              :V015101H.def
SPEED VMT                :V015101S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0510 0.0820 0.0850 0.0920 0.0950 0.1030 0.0990 0.0910 0.0700 0.0580
    0.0340 0.0250 0.0200 0.0180 0.0180 0.0130 0.0090 0.0060 0.0040 0.0030
    0.0040 0.0030 0.0030 0.0030 0.0110
  2 0.0510 0.0820 0.0850 0.0920 0.0950 0.1030 0.0990 0.0910 0.0700 0.0580
    0.0340 0.0250 0.0200 0.0180 0.0180 0.0130 0.0090 0.0060 0.0040 0.0030
    0.0040 0.0030 0.0030 0.0030 0.0110
  3 0.0510 0.0820 0.0850 0.0920 0.0950 0.1030 0.0990 0.0910 0.0700 0.0580
    0.0340 0.0250 0.0200 0.0180 0.0180 0.0130 0.0090 0.0060 0.0040 0.0030
    0.0040 0.0030 0.0030 0.0030 0.0110
  4 0.0440 0.0590 0.0570 0.0800 0.1060 0.1070 0.0840 0.0950 0.0690 0.0500
    0.0300 0.0240 0.0210 0.0220 0.0370 0.0310 0.0210 0.0120 0.0090 0.0090
    0.0100 0.0080 0.0050 0.0030 0.0070
  5 0.0440 0.0590 0.0570 0.0800 0.1060 0.1070 0.0840 0.0950 0.0690 0.0500
    0.0300 0.0240 0.0210 0.0220 0.0370 0.0310 0.0210 0.0120 0.0090 0.0090
    0.0100 0.0080 0.0050 0.0030 0.0070
  6 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
  7 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
  8 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
  9 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
 10 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
 11 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
 12 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
 13 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
 14 0.0268 0.0488 0.0520 0.0637 0.0794 0.0821 0.0740 0.0680 0.0566 0.0464
    0.0413 0.0432 0.0400 0.0407 0.0450 0.0288 0.0269 0.0208 0.0220 0.0193
    0.0201 0.0142 0.0109 0.0102 0.0186
 15 0.0320 0.0670 0.0670 0.0670 0.0670 0.0730 0.0610 0.0400 0.0410 0.0510
    0.0530 0.0660 0.0550 0.0570 0.0450 0.0190 0.0230 0.0280 0.0240 0.0160
    0.0110 0.0090 0.0070 0.0050 0.0160
 16 0.0300 0.0440 0.0400 0.0430 0.0420 0.0430 0.0430 0.0700 0.0680 0.0610
    0.0650 0.4510 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```

Delaware County, 1990 Baseline

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_DELA90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0231

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 8.4
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : DELA90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0231]  2
CALENDAR YEAR            :1990
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                            .627  .042  .139  .056  .026  .034  .003  .002
                            .002  .007  .008  .010  .034  .002  .001  .007
VMT BY FACILITY          :V023102F.def
VMT BY HOUR              :V023102H.def
SPEED VMT                :V023102S.def
                .
                .
                .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0660 0.0930 0.0840 0.0830 0.0870 0.0870 0.0890 0.0840 0.0710 0.0600
    0.0380 0.0270 0.0230 0.0210 0.0230 0.0170 0.0120 0.0080 0.0040 0.0040
    0.0040 0.0030 0.0020 0.0020 0.0080
  2 0.0420 0.0610 0.0690 0.0680 0.0830 0.0870 0.0910 0.1030 0.0680 0.0600
    0.0400 0.0300 0.0270 0.0240 0.0400 0.0290 0.0220 0.0140 0.0080 0.0080
    0.0070 0.0050 0.0040 0.0030 0.0070
  3 0.0420 0.0610 0.0690 0.0680 0.0830 0.0870 0.0910 0.1030 0.0680 0.0600
    0.0400 0.0300 0.0270 0.0240 0.0400 0.0290 0.0220 0.0140 0.0080 0.0080
    0.0070 0.0050 0.0040 0.0030 0.0070
  4 0.0530 0.0760 0.0680 0.0920 0.1060 0.0930 0.0730 0.0890 0.0630 0.0520
    0.0330 0.0240 0.0180 0.0210 0.0390 0.0270 0.0180 0.0110 0.0080 0.0080
    0.0110 0.0050 0.0030 0.0030 0.0060
  5 0.0530 0.0760 0.0680 0.0920 0.1060 0.0930 0.0730 0.0890 0.0630 0.0520
    0.0330 0.0240 0.0180 0.0210 0.0390 0.0270 0.0180 0.0110 0.0080 0.0080
    0.0110 0.0050 0.0030 0.0030 0.0060
  6 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
  7 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
  8 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
  9 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
 10 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
 11 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
 12 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
 13 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
 14 0.0300 0.0507 0.0514 0.0631 0.0781 0.0867 0.0721 0.0667 0.0592 0.0490
    0.0393 0.0413 0.0368 0.0433 0.0463 0.0294 0.0250 0.0208 0.0233 0.0193
    0.0195 0.0123 0.0103 0.0089 0.0173
 15 0.0320 0.0670 0.0670 0.0670 0.0670 0.0730 0.0610 0.0400 0.0410 0.0510
    0.0530 0.0660 0.0550 0.0570 0.0450 0.0190 0.0230 0.0280 0.0240 0.0160
    0.0110 0.0090 0.0070 0.0050 0.0160
 16 0.0340 0.0560 0.0430 0.0350 0.0450 0.0420 0.0540 0.0780 0.0660 0.0520
    0.0670 0.4280 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```

Montgomery County, 1990 Baseline

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_MONT90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0461

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 8.4
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : MONT90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0461]  2
CALENDAR YEAR            :1990
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                            .651  .044  .145  .059  .027  .022  .002  .001
                            .001  .004  .005  .006  .023  .001  .001  .008
VMT BY FACILITY          :V046102F.def
VMT BY HOUR              :V046102H.def
SPEED VMT                :V046102S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0520 0.0870 0.0860 0.0930 0.0950 0.0950 0.0970 0.0880 0.0710 0.0580
    0.0350 0.0250 0.0200 0.0180 0.0200 0.0150 0.0100 0.0060 0.0040 0.0030
    0.0040 0.0030 0.0020 0.0030 0.0100
  2 0.0400 0.0590 0.0590 0.0710 0.0890 0.0900 0.0910 0.1010 0.0720 0.0590
    0.0410 0.0300 0.0260 0.0240 0.0380 0.0300 0.0220 0.0140 0.0080 0.0080
    0.0060 0.0060 0.0040 0.0040 0.0080
  3 0.0400 0.0590 0.0590 0.0710 0.0890 0.0900 0.0910 0.1010 0.0720 0.0590
    0.0410 0.0300 0.0260 0.0240 0.0380 0.0300 0.0220 0.0140 0.0080 0.0080
    0.0060 0.0060 0.0040 0.0040 0.0080
  4 0.0440 0.0580 0.0640 0.0850 0.1150 0.0970 0.0800 0.0950 0.0720 0.0500
    0.0320 0.0240 0.0210 0.0230 0.0380 0.0290 0.0200 0.0100 0.0090 0.0080
    0.0090 0.0060 0.0040 0.0030 0.0040
  5 0.0440 0.0580 0.0640 0.0850 0.1150 0.0970 0.0800 0.0950 0.0720 0.0500
    0.0320 0.0240 0.0210 0.0230 0.0380 0.0290 0.0200 0.0100 0.0090 0.0080
    0.0090 0.0060 0.0040 0.0030 0.0040
  6 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
  7 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
  8 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
  9 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
 10 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
 11 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
 12 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
 13 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
 14 0.0268 0.0481 0.0553 0.0663 0.0813 0.0893 0.0779 0.0719 0.0560 0.0523
    0.0387 0.0426 0.0381 0.0420 0.0424 0.0255 0.0250 0.0195 0.0207 0.0173
    0.0169 0.0129 0.0090 0.0076 0.0167
 15 0.0320 0.0670 0.0670 0.0670 0.0670 0.0730 0.0610 0.0400 0.0410 0.0510
    0.0530 0.0660 0.0550 0.0570 0.0450 0.0190 0.0230 0.0280 0.0240 0.0160
    0.0110 0.0090 0.0070 0.0050 0.0160
 16 0.0390 0.0500 0.0380 0.0400 0.0420 0.0360 0.0500 0.0750 0.0740 0.0520
    0.0670 0.4370 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Philadelphia County, 1990 Baseline

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_PHIL90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0673

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 8.4
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : PHIL90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[11 0673] 11
CALENDAR YEAR            :1990
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                            .601  .040  .134  .054  .025  .046  .005  .003
                            .002  .009  .011  .013  .047  .002  .001  .007
VMT BY FACILITY          :V067311F.def
VMT BY HOUR              :V067311H.def
SPEED VMT                :V067311S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
1990 Baseline

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0370 0.0540 0.0560 0.0640 0.0700 0.0800 0.0850 0.0880 0.0810 0.0770
    0.0530 0.0420 0.0380 0.0350 0.0380 0.0310 0.0230 0.0140 0.0070 0.0060
    0.0050 0.0040 0.0030 0.0030 0.0060
  2 0.0260 0.0390 0.0430 0.0510 0.0620 0.0700 0.0760 0.0920 0.0720 0.0660
    0.0520 0.0400 0.0360 0.0390 0.0580 0.0460 0.0350 0.0230 0.0160 0.0150
    0.0110 0.0080 0.0060 0.0070 0.0110
  3 0.0260 0.0390 0.0430 0.0510 0.0620 0.0700 0.0760 0.0920 0.0720 0.0660
    0.0520 0.0400 0.0360 0.0390 0.0580 0.0460 0.0350 0.0230 0.0160 0.0150
    0.0110 0.0080 0.0060 0.0070 0.0110
  4 0.0300 0.0590 0.0520 0.0760 0.0760 0.0820 0.0810 0.0920 0.0690 0.0520
    0.0370 0.0350 0.0320 0.0310 0.0460 0.0440 0.0240 0.0150 0.0120 0.0170
    0.0140 0.0090 0.0050 0.0030 0.0070
  5 0.0300 0.0590 0.0520 0.0760 0.0760 0.0820 0.0810 0.0920 0.0690 0.0520
    0.0370 0.0350 0.0320 0.0310 0.0460 0.0440 0.0240 0.0150 0.0120 0.0170
    0.0140 0.0090 0.0050 0.0030 0.0070
  6 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
  7 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
  8 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
  9 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
 10 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
 11 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
 12 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
 13 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
 14 0.0242 0.0468 0.0449 0.0501 0.0657 0.0737 0.0838 0.0634 0.0612 0.0490
    0.0471 0.0504 0.0413 0.0446 0.0496 0.0236 0.0223 0.0260 0.0357 0.0245
    0.0195 0.0136 0.0122 0.0148 0.0121
 15 0.0320 0.0670 0.0670 0.0670 0.0670 0.0730 0.0610 0.0400 0.0410 0.0510
    0.0530 0.0660 0.0550 0.0570 0.0450 0.0190 0.0230 0.0280 0.0240 0.0160
    0.0110 0.0090 0.0070 0.0050 0.0160
 16 0.0390 0.0510 0.0320 0.0390 0.0400 0.0420 0.0660 0.0760 0.0810 0.0550
    0.0620 0.4170 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

Bucks County, 2005 Uncontrolled Baseline

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_BUCK05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0091

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : BUCK99ag.dat
DIESEL FRACTIONS         :
0.0001 0.0002 0.0006 0.0009 0.0002 0.0003 0.0003 0.0001 0.0014 0.0031
0.0077 0.0055 0.0017 0.0022 0.0034 0.0042 0.0011 0.0025 0.0027 0.0008
0.0006 0.0000 0.0000 0.0000 0.0002
0.0722 0.0412 0.0331 0.0647 0.0433 0.0501 0.0273 0.0242 0.0206 0.0325
0.0276 0.0290 0.0212 0.0157 0.0266 0.0257 0.0107 0.0199 0.0095 0.0196
0.0244 0.0194 0.0182 0.0131 0.0177
0.0722 0.0412 0.0331 0.0647 0.0433 0.0501 0.0273 0.0242 0.0206 0.0325
0.0276 0.0290 0.0212 0.0157 0.0266 0.0257 0.0107 0.0199 0.0095 0.0196
0.0244 0.0194 0.0182 0.0131 0.0177
0.0157 0.0095 0.0260 0.0256 0.0198 0.0326 0.0095 0.0092 0.0167 0.0160
0.0216 0.0248 0.0141 0.0189 0.0142 0.0047 0.0044 0.0000 0.0296 0.0072
0.0000 0.0040 0.0000 0.0000 0.0000
0.0157 0.0095 0.0260 0.0256 0.0198 0.0326 0.0095 0.0092 0.0167 0.0160
0.0216 0.0248 0.0141 0.0189 0.0142 0.0047 0.0044 0.0000 0.0296 0.0072
0.0000 0.0040 0.0000 0.0000 0.0000
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
```

```
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[01 0091]  1
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
            .407  .074  .248  .076  .035  .050  .005  .004
            .003  .011  .013  .014  .051  .003  .001  .005
VMT BY FACILITY          :V009101F.def
VMT BY HOUR              :V009101H.def
SPEED VMT                :V009101S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

Registration Distribution used in Mobile 6

REG DIST

1	0.0445	0.0709	0.0721	0.0751	0.0921	0.0801	0.0754	0.0666	0.0616	0.0614
	0.0590	0.0551	0.0489	0.0393	0.0277	0.0198	0.0106	0.0059	0.0043	0.0039
	0.0053	0.0040	0.0026	0.0018	0.0120					
2	0.0379	0.0460	0.0527	0.0480	0.0636	0.0761	0.0556	0.0481	0.0502	0.0560
	0.0687	0.0705	0.0668	0.0644	0.0436	0.0325	0.0213	0.0152	0.0133	0.0103
	0.0155	0.0130	0.0083	0.0039	0.0185					
3	0.0379	0.0460	0.0527	0.0480	0.0636	0.0761	0.0556	0.0481	0.0502	0.0560
	0.0687	0.0705	0.0668	0.0644	0.0436	0.0325	0.0213	0.0152	0.0133	0.0103
	0.0155	0.0130	0.0083	0.0039	0.0185					
4	0.0722	0.0777	0.1109	0.0662	0.0942	0.0678	0.0476	0.0370	0.0305	0.0460
	0.0602	0.0524	0.0401	0.0418	0.0320	0.0240	0.0128	0.0083	0.0076	0.0078
	0.0161	0.0141	0.0085	0.0050	0.0192					
5	0.0722	0.0777	0.1109	0.0662	0.0942	0.0678	0.0476	0.0370	0.0305	0.0460
	0.0602	0.0524	0.0401	0.0418	0.0320	0.0240	0.0128	0.0083	0.0076	0.0078
	0.0161	0.0141	0.0085	0.0050	0.0192					
16	0.0738	0.0799	0.0708	0.0632	0.0534	0.0474	0.0403	0.0328	0.0284	0.0234
	0.0265	0.0224	0.0275	0.0449	0.0412	0.0266	0.0386	0.0445	0.0417	0.0325
	0.0220	0.0179	0.0135	0.0146	0.0722					

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

Chester County, 2005 Uncontrolled Baseline

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_CHES05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0151

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : CHES99ag.dat
DIESEL FRACTIONS         :
0.0003 0.0001 0.0002 0.0002 0.0003 0.0002 0.0001 0.0003 0.0009 0.0017
0.0022 0.0024 0.0017 0.0028 0.0068 0.0039 0.0029 0.0068 0.0070 0.0000
0.0010 0.0028 0.0000 0.0000 0.0008
0.1541 0.1094 0.0692 0.0909 0.0659 0.0618 0.0367 0.0274 0.0249 0.0336
0.0285 0.0408 0.0267 0.0208 0.0381 0.0216 0.0088 0.0313 0.0202 0.0291
0.0124 0.0091 0.0131 0.0093 0.0097
0.1541 0.1094 0.0692 0.0909 0.0659 0.0618 0.0367 0.0274 0.0249 0.0336
0.0285 0.0408 0.0267 0.0208 0.0381 0.0216 0.0088 0.0313 0.0202 0.0291
0.0124 0.0091 0.0131 0.0093 0.0097
0.0105 0.0061 0.0392 0.0191 0.0208 0.0219 0.0064 0.0168 0.0329 0.0240
0.0088 0.0217 0.0254 0.0334 0.0525 0.0211 0.0070 0.0000 0.0122 0.0000
0.0000 0.0000 0.0000 0.0000 0.0051
0.0105 0.0061 0.0392 0.0191 0.0208 0.0219 0.0064 0.0168 0.0329 0.0240
0.0088 0.0217 0.0254 0.0334 0.0525 0.0211 0.0070 0.0000 0.0122 0.0000
0.0000 0.0000 0.0000 0.0000 0.0051
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

```
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[01 0151]  1
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .385  .070  .234  .072  .033  .065  .006  .005
                           .004  .014  .017  .019  .066  .003  .002  .005
VMT BY FACILITY          :V015101F.def
VMT BY HOUR              :V015101H.def
SPEED VMT                :V015101S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

Registration Distribution used in Mobile 6

REG DIST

1	0.0475	0.0779	0.0784	0.0818	0.1006	0.0854	0.0765	0.0655	0.0604	0.0587
	0.0549	0.0498	0.0430	0.0349	0.0234	0.0171	0.0090	0.0052	0.0038	0.0033
	0.0044	0.0032	0.0022	0.0016	0.0115					
2	0.0434	0.0504	0.0559	0.0512	0.0722	0.0776	0.0569	0.0499	0.0522	0.0540
	0.0649	0.0722	0.0628	0.0593	0.0387	0.0301	0.0196	0.0132	0.0119	0.0094
	0.0138	0.0113	0.0078	0.0037	0.0176					
3	0.0434	0.0504	0.0559	0.0512	0.0722	0.0776	0.0569	0.0499	0.0522	0.0540
	0.0649	0.0722	0.0628	0.0593	0.0387	0.0301	0.0196	0.0132	0.0119	0.0094
	0.0138	0.0113	0.0078	0.0037	0.0176					
4	0.0779	0.0804	0.1130	0.0728	0.0907	0.0710	0.0513	0.0342	0.0348	0.0444
	0.0557	0.0528	0.0387	0.0466	0.0281	0.0194	0.0117	0.0097	0.0067	0.0084
	0.0129	0.0110	0.0082	0.0035	0.0161					
5	0.0779	0.0804	0.1130	0.0728	0.0907	0.0710	0.0513	0.0342	0.0348	0.0444
	0.0557	0.0528	0.0387	0.0466	0.0281	0.0194	0.0117	0.0097	0.0067	0.0084
	0.0129	0.0110	0.0082	0.0035	0.0161					
16	0.0667	0.0729	0.0627	0.0570	0.0467	0.0424	0.0349	0.0292	0.0256	0.0256
	0.0275	0.0239	0.0252	0.0439	0.0454	0.0354	0.0410	0.0611	0.0475	0.0357
	0.0252	0.0224	0.0162	0.0156	0.0703					

Delaware County, 2005 Uncontrolled Baseline

```
REPORT FILE                 : m6output.out     REPLACE
DATABASE OUTPUT             :
WITH FIELDNAMES             :
EMISSIONS TABLE             : M6OUTPUT_DELA05A.TB1  REPLACE
POLLUTANTS                  : HC CO NOX
AGGREGATED OUTPUT           :
RUN DATA                    : 0231

NO CLEAN AIR ACT            :
NO TIER2                    :
NO 2007 HDDV RULE           :
MIN/MAX TEMPERATURE         : 70.7  93.4
94+ LDG IMP                 : NLEVNE.D
FUEL RVP                    : 9.0
EXPRESS HC AS VOC           :
EXPAND EXHAUST              :
EXPAND EVAPORATIVE          :
NO REFUELING                :
REG DISTRIBUTION            : DELA99ag.dat
DIESEL FRACTIONS            :
0.0002 0.0004 0.0004 0.0004 0.0003 0.0002 0.0001 0.0003 0.0009 0.0017
0.0013 0.0022 0.0010 0.0025 0.0023 0.0029 0.0009 0.0011 0.0007 0.0008
0.0012 0.0000 0.0000 0.0000 0.0003
0.0484 0.0369 0.0287 0.0408 0.0467 0.0425 0.0244 0.0271 0.0255 0.0342
0.0240 0.0272 0.0167 0.0185 0.0206 0.0206 0.0163 0.0105 0.0121 0.0458
0.0084 0.0000 0.0203 0.0099 0.0185
0.0484 0.0369 0.0287 0.0408 0.0467 0.0425 0.0244 0.0271 0.0255 0.0342
0.0240 0.0272 0.0167 0.0185 0.0206 0.0206 0.0163 0.0105 0.0121 0.0458
0.0084 0.0000 0.0203 0.0099 0.0185
0.0037 0.0056 0.0215 0.0179 0.0189 0.0304 0.0149 0.0090 0.0050 0.0090
0.0042 0.0067 0.0110 0.0128 0.0128 0.0000 0.0000 0.0000 0.0132 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.0037 0.0056 0.0215 0.0179 0.0189 0.0304 0.0149 0.0090 0.0050 0.0090
0.0042 0.0067 0.0110 0.0128 0.0128 0.0000 0.0000 0.0000 0.0132 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

```
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0231]  2
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .426  .078  .260  .080  .037  .036  .004  .003
                           .002  .008  .010  .010  .037  .002  .001  .006
VMT BY FACILITY          :V023102F.def
VMT BY HOUR              :V023102H.def
SPEED VMT                :V023102S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
  1  0.0575 0.0768 0.0721 0.0726 0.0897 0.0775 0.0734 0.0631 0.0594 0.0596
     0.0580 0.0538 0.0484 0.0400 0.0286 0.0202 0.0112 0.0061 0.0049 0.0042
     0.0054 0.0038 0.0025 0.0015 0.0097
  2  0.0347 0.0454 0.0528 0.0451 0.0613 0.0740 0.0553 0.0483 0.0544 0.0550
     0.0681 0.0708 0.0686 0.0708 0.0436 0.0357 0.0226 0.0155 0.0135 0.0107
     0.0147 0.0114 0.0081 0.0041 0.0155
  3  0.0347 0.0454 0.0528 0.0451 0.0613 0.0740 0.0553 0.0483 0.0544 0.0550
     0.0681 0.0708 0.0686 0.0708 0.0436 0.0357 0.0226 0.0155 0.0135 0.0107
     0.0147 0.0114 0.0081 0.0041 0.0155
  4  0.0893 0.0729 0.1108 0.0782 0.0913 0.0703 0.0441 0.0366 0.0331 0.0459
     0.0585 0.0491 0.0374 0.0448 0.0322 0.0230 0.0123 0.0068 0.0062 0.0076
     0.0145 0.0084 0.0059 0.0039 0.0169
  5  0.0893 0.0729 0.1108 0.0782 0.0913 0.0703 0.0441 0.0366 0.0331 0.0459
     0.0585 0.0491 0.0374 0.0448 0.0322 0.0230 0.0123 0.0068 0.0062 0.0076
     0.0145 0.0084 0.0059 0.0039 0.0169
 16  0.0616 0.0689 0.0705 0.0544 0.0561 0.0412 0.0394 0.0335 0.0249 0.0241
     0.0264 0.0297 0.0297 0.0458 0.0482 0.0350 0.0425 0.0555 0.0433 0.0381
     0.0226 0.0163 0.0124 0.0100 0.0699
```

Montgomery County, 2005 Uncontrolled Baseline

```
REPORT FILE                 : m6output.out      REPLACE
DATABASE OUTPUT             :
WITH FIELDNAMES             :
EMISSIONS TABLE             : M6OUTPUT_MONT05A.TB1  REPLACE
POLLUTANTS                  : HC CO NOX
AGGREGATED OUTPUT           :
RUN DATA                    : 0461

NO CLEAN AIR ACT            :
NO TIER2                    :
NO 2007 HDDV RULE           :
MIN/MAX TEMPERATURE         : 70.7  93.4
94+ LDG IMP                 : NLEVNE.D
FUEL RVP                    : 9.0
EXPRESS HC AS VOC           :
EXPAND EXHAUST              :
EXPAND EVAPORATIVE          :
NO REFUELING                :
REG DISTRIBUTION            : MONT99ag.dat
DIESEL FRACTIONS            :
0.0000 0.0001 0.0001 0.0003 0.0003 0.0002 0.0001 0.0001 0.0021 0.0040
0.0042 0.0037 0.0019 0.0030 0.0053 0.0045 0.0013 0.0025 0.0006 0.0019
0.0015 0.0007 0.0000 0.0000 0.0002
0.0789 0.0402 0.0610 0.1011 0.0898 0.0664 0.0379 0.0295 0.0384 0.0368
0.0454 0.0423 0.0284 0.0171 0.0318 0.0208 0.0147 0.0197 0.0126 0.0276
0.0063 0.0120 0.0063 0.0000 0.0121
0.0789 0.0402 0.0610 0.1011 0.0898 0.0664 0.0379 0.0295 0.0384 0.0368
0.0454 0.0423 0.0284 0.0171 0.0318 0.0208 0.0147 0.0197 0.0126 0.0276
0.0063 0.0120 0.0063 0.0000 0.0121
0.0186 0.0108 0.0312 0.0296 0.0263 0.0322 0.0079 0.0083 0.0047 0.0051
0.0075 0.0119 0.0073 0.0238 0.0140 0.0073 0.0040 0.0000 0.0000 0.0000
0.0066 0.0042 0.0070 0.0000 0.0062
0.0186 0.0108 0.0312 0.0296 0.0263 0.0322 0.0079 0.0083 0.0047 0.0051
0.0075 0.0119 0.0073 0.0238 0.0140 0.0073 0.0040 0.0000 0.0000 0.0000
0.0066 0.0042 0.0070 0.0000 0.0062
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Uncontrolled Baseline

```
0.0476 0.0365 0.0288 0.0274 0.0297
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[01 0461]  1
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .408  .075  .249  .077  .035  .048  .005  .004
                           .003  .011  .013  .014  .049  .002  .001  .006
VMT BY FACILITY           :V046101F.def
VMT BY HOUR               :V046101H.def
SPEED VMT                 :V046101S.def
                .
                .
                .
END OF RUN                :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
   1  0.0871  0.1197  0.1136  0.0841  0.0866  0.0694  0.0619  0.0538  0.0507  0.0495
      0.0459  0.0422  0.0372  0.0289  0.0206  0.0143  0.0070  0.0043  0.0031  0.0027
      0.0036  0.0026  0.0019  0.0012  0.0082
   2  0.0505  0.1172  0.1005  0.0566  0.0589  0.0614  0.0502  0.0400  0.0429  0.0459
      0.0576  0.0569  0.0528  0.0532  0.0345  0.0261  0.0166  0.0123  0.0097  0.0080
      0.0130  0.0102  0.0065  0.0035  0.0151
   3  0.0505  0.1172  0.1005  0.0566  0.0589  0.0614  0.0502  0.0400  0.0429  0.0459
      0.0576  0.0569  0.0528  0.0532  0.0345  0.0261  0.0166  0.0123  0.0097  0.0080
      0.0130  0.0102  0.0065  0.0035  0.0151
   4  0.0860  0.1270  0.1647  0.0824  0.0924  0.0650  0.0387  0.0274  0.0244  0.0375
      0.0457  0.0383  0.0311  0.0319  0.0244  0.0157  0.0095  0.0072  0.0049  0.0050
      0.0115  0.0091  0.0054  0.0024  0.0123
   5  0.0860  0.1270  0.1647  0.0824  0.0924  0.0650  0.0387  0.0274  0.0244  0.0375
      0.0457  0.0383  0.0311  0.0319  0.0244  0.0157  0.0095  0.0072  0.0049  0.0050
      0.0115  0.0091  0.0054  0.0024  0.0123
  16  0.0641  0.0740  0.0668  0.0587  0.0518  0.0466  0.0384  0.0357  0.0244  0.0252
      0.0274  0.4869  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
      0.0000  0.0000  0.0000  0.0000  0.0000
```

Philadelphia County, 2005 Uncontrolled Baseline

```
REPORT FILE                    : m6output.out      REPLACE
DATABASE OUTPUT                :
WITH FIELDNAMES                :
EMISSIONS TABLE                : M6OUTPUT_PHIL05A.TB1  REPLACE
POLLUTANTS                     : HC CO NOX
AGGREGATED OUTPUT              :
RUN DATA                       : 0673

NO CLEAN AIR ACT               :
NO TIER2                       :
NO 2007 HDDV RULE              :
MIN/MAX TEMPERATURE            : 70.7  93.4
94+ LDG IMP                    : NLEVNE.D
FUEL RVP                       : 9.0
EXPRESS HC AS VOC              :
EXPAND EXHAUST                 :
EXPAND EVAPORATIVE             :
NO REFUELING                   :
REG DISTRIBUTION               : PHIL99ag.dat
DIESEL FRACTIONS               :
0.0000 0.0004 0.0003 0.0005 0.0006 0.0007 0.0001 0.0003 0.0042 0.0063
0.0056 0.0044 0.0013 0.0014 0.0017 0.0022 0.0004 0.0008 0.0011 0.0010
0.0003 0.0000 0.0000 0.0007 0.0004
0.1014 0.0870 0.1011 0.0696 0.1107 0.0726 0.0739 0.0486 0.0438 0.0508
0.0534 0.0479 0.0228 0.0245 0.0247 0.0186 0.0076 0.0113 0.0108 0.0262
0.0212 0.0110 0.0085 0.0058 0.0093
0.1014 0.0870 0.1011 0.0696 0.1107 0.0726 0.0739 0.0486 0.0438 0.0508
0.0534 0.0479 0.0228 0.0245 0.0247 0.0186 0.0076 0.0113 0.0108 0.0262
0.0212 0.0110 0.0085 0.0058 0.0093
0.0043 0.0110 0.0206 0.0322 0.0302 0.0323 0.0110 0.0019 0.0267 0.0175
0.0250 0.0149 0.0052 0.0057 0.0179 0.0060 0.0041 0.0000 0.0000 0.0056
0.0037 0.0000 0.0000 0.0000 0.0022
0.0043 0.0110 0.0206 0.0322 0.0302 0.0323 0.0110 0.0019 0.0267 0.0175
0.0250 0.0149 0.0052 0.0057 0.0179 0.0060 0.0041 0.0000 0.0000 0.0056
0.0037 0.0000 0.0000 0.0000 0.0022
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0:0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
```

```
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM                 : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS             : 1 1968 2050
I/M VEHICLES                : 1 22222 11111111 1
I/M STRINGENCY              : 1 17.8
I/M COMPLIANCE              : 1 94.0
I/M WAIVER RATES            : 1 2.0 1.1
I/M EFFECTIVENES            : 0.50 0.50 0.50
NO I/M TTC CREDITS          : 1


SCENARIO RECORD             :[11 0673] 11
CALENDAR YEAR               :2005
EVALUATION MONTH            : 7
ABSOLUTE HUMIDITY           :  72.6
SEASON                      : 1
VMT FRACTIONS               :
                               .426 .078 .260 .080 .037 .036 .004 .003
                               .002 .008 .010 .010 .037 .002 .001 .006
VMT BY FACILITY             :V067311F.def
VMT BY HOUR                 :V067311H.def
SPEED VMT                   :V067311S.def
                 .
                 .
                 .
END OF RUN                  :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0409 0.0541 0.0534 0.0588 0.0757 0.0650 0.0628 0.0594 0.0589 0.0659
    0.0682 0.0695 0.0662 0.0571 0.0429 0.0310 0.0170 0.0100 0.0076 0.0060
    0.0080 0.0055 0.0041 0.0028 0.0091
  2 0.0298 0.0434 0.0430 0.0407 0.0461 0.0529 0.0401 0.0382 0.0401 0.0489
    0.0595 0.0729 0.0735 0.0763 0.0602 0.0494 0.0356 0.0240 0.0215 0.0174
    0.0234 0.0175 0.0137 0.0067 0.0250
  3 0.0298 0.0434 0.0430 0.0407 0.0461 0.0529 0.0401 0.0382 0.0401 0.0489
    0.0595 0.0729 0.0735 0.0763 0.0602 0.0494 0.0356 0.0240 0.0215 0.0174
    0.0234 0.0175 0.0137 0.0067 0.0250
  4 0.0552 0.0574 0.0802 0.0563 0.0757 0.0635 0.0429 0.0417 0.0355 0.0540
    0.0537 0.0530 0.0459 0.0553 0.0396 0.0262 0.0193 0.0158 0.0160 0.0142
    0.0210 0.0221 0.0121 0.0074 0.0358
  5 0.0552 0.0574 0.0802 0.0563 0.0757 0.0635 0.0429 0.0417 0.0355 0.0540
    0.0537 0.0530 0.0459 0.0553 0.0396 0.0262 0.0193 0.0158 0.0160 0.0142
    0.0210 0.0221 0.0121 0.0074 0.0358
 16 0.0773 0.0833 0.0681 0.0576 0.0482 0.0508 0.0429 0.0337 0.0232 0.0287
    0.0232 0.4632 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Bucks County, 2005 Adjusted Baseline

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_BUCK90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0091

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : BUCK90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0091]  2
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        : 72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .640  .043  .142  .058  .026  .028  .003  .002
                           .001  .005  .007  .008  .028  .001  .001  .007
VMT BY FACILITY          :V009102F.def
VMT BY HOUR              :V009102H.def
SPEED VMT                :V009102S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Registration Distribution used in Mobile 6

REG	DIST									
1	0.0445	0.0709	0.0721	0.0751	0.0921	0.0801	0.0754	0.0666	0.0616	0.0614
	0.0590	0.0551	0.0489	0.0393	0.0277	0.0198	0.0106	0.0059	0.0043	0.0039
	0.0053	0.0040	0.0026	0.0018	0.0120					
2	0.0379	0.0460	0.0527	0.0480	0.0636	0.0761	0.0556	0.0481	0.0502	0.0560
	0.0687	0.0705	0.0668	0.0644	0.0436	0.0325	0.0213	0.0152	0.0133	0.0103
	0.0155	0.0130	0.0083	0.0039	0.0185					
3	0.0379	0.0460	0.0527	0.0480	0.0636	0.0761	0.0556	0.0481	0.0502	0.0560
	0.0687	0.0705	0.0668	0.0644	0.0436	0.0325	0.0213	0.0152	0.0133	0.0103
	0.0155	0.0130	0.0083	0.0039	0.0185					
4	0.0722	0.0777	0.1109	0.0662	0.0942	0.0678	0.0476	0.0370	0.0305	0.0460
	0.0602	0.0524	0.0401	0.0418	0.0320	0.0240	0.0128	0.0083	0.0076	0.0078
	0.0161	0.0141	0.0085	0.0050	0.0192					
5	0.0722	0.0777	0.1109	0.0662	0.0942	0.0678	0.0476	0.0370	0.0305	0.0460
	0.0602	0.0524	0.0401	0.0418	0.0320	0.0240	0.0128	0.0083	0.0076	0.0078
	0.0161	0.0141	0.0085	0.0050	0.0192					
16	0.0738	0.0799	0.0708	0.0632	0.0534	0.0474	0.0403	0.0328	0.0284	0.0234
	0.0265	0.0224	0.0275	0.0449	0.0412	0.0266	0.0386	0.0445	0.0417	0.0325
	0.0220	0.0179	0.0135	0.0146	0.0722					

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Chester County, 2005 Adjusted Baseline

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_CHES90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0151

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : CHES90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[01 0151]  1
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        : 72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .581 .039 .130 .052 .024 .055 .006 .003
                           .003 .011 .013 .016 .056 .003 .001 .007
VMT BY FACILITY          :V015101F.def
VMT BY HOUR              :V015101H.def
SPEED VMT                :V015101S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Registration Distribution used in Mobile 6

REG DIST										
1	0.0475	0.0779	0.0784	0.0818	0.1006	0.0854	0.0765	0.0655	0.0604	0.0587
	0.0549	0.0498	0.0430	0.0349	0.0234	0.0171	0.0090	0.0052	0.0038	0.0033
	0.0044	0.0032	0.0022	0.0016	0.0115					
2	0.0434	0.0504	0.0559	0.0512	0.0722	0.0776	0.0569	0.0499	0.0522	0.0540
	0.0649	0.0722	0.0628	0.0593	0.0387	0.0301	0.0196	0.0132	0.0119	0.0094
	0.0138	0.0113	0.0078	0.0037	0.0176					
3	0.0434	0.0504	0.0559	0.0512	0.0722	0.0776	0.0569	0.0499	0.0522	0.0540
	0.0649	0.0722	0.0628	0.0593	0.0387	0.0301	0.0196	0.0132	0.0119	0.0094
	0.0138	0.0113	0.0078	0.0037	0.0176					
4	0.0779	0.0804	0.1130	0.0728	0.0907	0.0710	0.0513	0.0342	0.0348	0.0444
	0.0557	0.0528	0.0387	0.0466	0.0281	0.0194	0.0117	0.0097	0.0067	0.0084
	0.0129	0.0110	0.0082	0.0035	0.0161					
5	0.0779	0.0804	0.1130	0.0728	0.0907	0.0710	0.0513	0.0342	0.0348	0.0444
	0.0557	0.0528	0.0387	0.0466	0.0281	0.0194	0.0117	0.0097	0.0067	0.0084
	0.0129	0.0110	0.0082	0.0035	0.0161					
16	0.0667	0.0729	0.0627	0.0570	0.0467	0.0424	0.0349	0.0292	0.0256	0.0256
	0.0275	0.0239	0.0252	0.0439	0.0454	0.0354	0.0410	0.0611	0.0475	0.0357
	0.0252	0.0224	0.0162	0.0156	0.0703					

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Delaware County, 2005 Adjusted Baseline

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_DELA90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0231

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : DELA90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0231]  2
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .627  .042  .139  .056  .026  .034  .003  .002
                           .002  .007  .008  .010  .034  .002  .001  .007
VMT BY FACILITY          :V023102F.def
VMT BY HOUR              :V023102H.def
SPEED VMT                :V023102S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
   1 0.0575 0.0768 0.0721 0.0726 0.0897 0.0775 0.0734 0.0631 0.0594 0.0596
     0.0580 0.0538 0.0484 0.0400 0.0286 0.0202 0.0112 0.0061 0.0049 0.0042
     0.0054 0.0038 0.0025 0.0015 0.0097
   2 0.0347 0.0454 0.0528 0.0451 0.0613 0.0740 0.0553 0.0483 0.0544 0.0550
     0.0681 0.0708 0.0686 0.0708 0.0436 0.0357 0.0226 0.0155 0.0135 0.0107
     0.0147 0.0114 0.0081 0.0041 0.0155
   3 0.0347 0.0454 0.0528 0.0451 0.0613 0.0740 0.0553 0.0483 0.0544 0.0550
     0.0681 0.0708 0.0686 0.0708 0.0436 0.0357 0.0226 0.0155 0.0135 0.0107
     0.0147 0.0114 0.0081 0.0041 0.0155
   4 0.0893 0.0729 0.1108 0.0782 0.0913 0.0703 0.0441 0.0366 0.0331 0.0459
     0.0585 0.0491 0.0374 0.0448 0.0322 0.0230 0.0123 0.0068 0.0062 0.0076
     0.0145 0.0084 0.0059 0.0039 0.0169
   5 0.0893 0.0729 0.1108 0.0782 0.0913 0.0703 0.0441 0.0366 0.0331 0.0459
     0.0585 0.0491 0.0374 0.0448 0.0322 0.0230 0.0123 0.0068 0.0062 0.0076
     0.0145 0.0084 0.0059 0.0039 0.0169
  16 0.0616 0.0689 0.0705 0.0544 0.0561 0.0412 0.0394 0.0335 0.0249 0.0241
     0.0264 0.0297 0.0297 0.0458 0.0482 0.0350 0.0425 0.0555 0.0433 0.0381
     0.0226 0.0163 0.0124 0.0100 0.0699
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Montgomery County, 2005 Adjusted Baseline

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_MONT90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0461

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : MONT90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[02 0461]  2
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        : 72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .651  .044  .145  .059  .027  .022  .002  .001
                           .001  .004  .005  .006  .023  .001  .001  .008
VMT BY FACILITY          :V046102F.def
VMT BY HOUR              :V046102H.def
SPEED VMT                :V046102S.def
                 .
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
   1  0.0871  0.1197  0.1136  0.0841  0.0866  0.0694  0.0619  0.0538  0.0507  0.0495
      0.0459  0.0422  0.0372  0.0289  0.0206  0.0143  0.0070  0.0043  0.0031  0.0027
      0.0036  0.0026  0.0019  0.0012  0.0082
   2  0.0505  0.1172  0.1005  0.0566  0.0589  0.0614  0.0502  0.0400  0.0429  0.0459
      0.0576  0.0569  0.0528  0.0532  0.0345  0.0261  0.0166  0.0123  0.0097  0.0080
      0.0130  0.0102  0.0065  0.0035  0.0151
   3  0.0505  0.1172  0.1005  0.0566  0.0589  0.0614  0.0502  0.0400  0.0429  0.0459
      0.0576  0.0569  0.0528  0.0532  0.0345  0.0261  0.0166  0.0123  0.0097  0.0080
      0.0130  0.0102  0.0065  0.0035  0.0151
   4  0.0860  0.1270  0.1647  0.0824  0.0924  0.0650  0.0387  0.0274  0.0244  0.0375
      0.0457  0.0383  0.0311  0.0319  0.0244  0.0157  0.0095  0.0072  0.0049  0.0050
      0.0115  0.0091  0.0054  0.0024  0.0123
   5  0.0860  0.1270  0.1647  0.0824  0.0924  0.0650  0.0387  0.0274  0.0244  0.0375
      0.0457  0.0383  0.0311  0.0319  0.0244  0.0157  0.0095  0.0072  0.0049  0.0050
      0.0115  0.0091  0.0054  0.0024  0.0123
  16  0.0641  0.0740  0.0668  0.0587  0.0518  0.0466  0.0384  0.0357  0.0244  0.0252
      0.0274  0.4869  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
      0.0000  0.0000  0.0000  0.0000  0.0000
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Adjusted Baseline

Philadelphia County, 2005 Adjusted Baseline

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_PHIL90A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0673

NO CLEAN AIR ACT         :
NO TIER2                 :
NO 2007 HDDV RULE        :
MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL RVP                 : 9.0
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : PHIL90ag.dat
I/M PROGRAM              : 1 1984 1999 1 TRC IDLE
I/M MODEL YEARS          : 1 1968 2050
I/M VEHICLES             : 1 22222 11111111 1
I/M STRINGENCY           : 1 17.8
I/M COMPLIANCE           : 1 94.0
I/M WAIVER RATES         : 1 2.0 1.1
I/M EFFECTIVENES         : 0.50 0.50 0.50
NO I/M TTC CREDITS       : 1


SCENARIO RECORD          :[11 0673] 11
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        : 72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .601 .040 .134 .054 .025 .046 .005 .003
                           .002 .009 .011 .013 .047 .002 .001 .007
VMT BY FACILITY          :V067311F.def
VMT BY HOUR              :V067311H.def
SPEED VMT                :V067311S.def
          .
          .
          .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
   1  0.0409  0.0541  0.0534  0.0588  0.0757  0.0650  0.0628  0.0594  0.0589  0.0659
      0.0682  0.0695  0.0662  0.0571  0.0429  0.0310  0.0170  0.0100  0.0076  0.0060
      0.0080  0.0055  0.0041  0.0028  0.0091
   2  0.0298  0.0434  0.0430  0.0407  0.0461  0.0529  0.0401  0.0382  0.0401  0.0489
      0.0595  0.0729  0.0735  0.0763  0.0602  0.0494  0.0356  0.0240  0.0215  0.0174
      0.0234  0.0175  0.0137  0.0067  0.0250
   3  0.0298  0.0434  0.0430  0.0407  0.0461  0.0529  0.0401  0.0382  0.0401  0.0489
      0.0595  0.0729  0.0735  0.0763  0.0602  0.0494  0.0356  0.0240  0.0215  0.0174
      0.0234  0.0175  0.0137  0.0067  0.0250
   4  0.0552  0.0574  0.0802  0.0563  0.0757  0.0635  0.0429  0.0417  0.0355  0.0540
      0.0537  0.0530  0.0459  0.0553  0.0396  0.0262  0.0193  0.0158  0.0160  0.0142
      0.0210  0.0221  0.0121  0.0074  0.0358
   5  0.0552  0.0574  0.0802  0.0563  0.0757  0.0635  0.0429  0.0417  0.0355  0.0540
      0.0537  0.0530  0.0459  0.0553  0.0396  0.0262  0.0193  0.0158  0.0160  0.0142
      0.0210  0.0221  0.0121  0.0074  0.0358
  16  0.0773  0.0833  0.0681  0.0576  0.0482  0.0508  0.0429  0.0337  0.0232  0.0287
      0.0232  0.4632  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
      0.0000  0.0000  0.0000  0.0000  0.0000
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Bucks County, 2005 Control Strategy

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_BUCK05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0091

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL PROGRAM             : 2 N
FUEL RVP                 : 8.7
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : BUCK99ag.dat
DIESEL FRACTIONS         :
0.0001 0.0002 0.0006 0.0009 0.0002 0.0003 0.0003 0.0001 0.0014 0.0031
0.0077 0.0055 0.0017 0.0022 0.0034 0.0042 0.0011 0.0025 0.0027 0.0008
0.0006 0.0000 0.0000 0.0000 0.0002
0.0722 0.0412 0.0331 0.0647 0.0433 0.0501 0.0273 0.0242 0.0206 0.0325
0.0276 0.0290 0.0212 0.0157 0.0266 0.0257 0.0107 0.0199 0.0095 0.0196
0.0244 0.0194 0.0182 0.0131 0.0177
0.0722 0.0412 0.0331 0.0647 0.0433 0.0501 0.0273 0.0242 0.0206 0.0325
0.0276 0.0290 0.0212 0.0157 0.0266 0.0257 0.0107 0.0199 0.0095 0.0196
0.0244 0.0194 0.0182 0.0131 0.0177
0.0157 0.0095 0.0260 0.0256 0.0198 0.0326 0.0095 0.0092 0.0167 0.0160
0.0216 0.0248 0.0141 0.0189 0.0142 0.0047 0.0044 0.0000 0.0296 0.0072
0.0000 0.0040 0.0000 0.0000 0.0000
0.0157 0.0095 0.0260 0.0256 0.0198 0.0326 0.0095 0.0092 0.0167 0.0160
0.0216 0.0248 0.0141 0.0189 0.0142 0.0047 0.0044 0.0000 0.0296 0.0072
0.0000 0.0040 0.0000 0.0000 0.0000
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
```

```
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM          : 1 2003 2050 1 TRC OBD I/M
I/M PROGRAM          : 2 1997 2050 1 TRC ASM 5015 FINAL
I/M PROGRAM          : 3 2003 2050 1 TRC EVAP OBD & GC
I/M PROGRAM          : 4 1997 2050 1 TRC GC
I/M MODEL YEARS      : 1 1996 2050
I/M MODEL YEARS      : 2 1981 1995
I/M MODEL YEARS      : 3 1996 2050
I/M MODEL YEARS      : 4 1975 1995
I/M VEHICLES         : 1 22222 11111111 1
I/M VEHICLES         : 2 22222 11111111 1
I/M VEHICLES         : 3 22222 11111111 1
I/M VEHICLES         : 4 22222 11111111 1
I/M STRINGENCY       : 1 20
I/M STRINGENCY       : 2 20
I/M COMPLIANCE       : 1 96.0
I/M COMPLIANCE       : 2 96.0
I/M COMPLIANCE       : 3 96.0
I/M COMPLIANCE       : 4 96.0
I/M WAIVER RATES     : 1 3.0 3.0
I/M WAIVER RATES     : 2 3.0 3.0
I/M WAIVER RATES     : 3 3.0 3.0
I/M WAIVER RATES     : 4 3.0 3.0
I/M EFFECTIVENES     : 1.00 1.00 1.00
ANTI-TAMP PROGRAM    : 97 75 50 22222 11111111 1  11 096. 22212222


SCENARIO RECORD      :[01 0091]  1
CALENDAR YEAR        :2005
EVALUATION MONTH     : 7
ABSOLUTE HUMIDITY    :  72.6
SEASON               : 1
VMT FRACTIONS        :
                       .407  .074  .248  .076  .035  .050  .005  .004
                       .003  .011  .013  .014  .051  .003  .001  .005
VMT BY FACILITY      :V009101F.def
VMT BY HOUR          :V009101H.def
SPEED VMT            :V009101S.def
                 .
                 .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Registration Distribution used in Mobile 6

REG DIST

1	0.0445	0.0709	0.0721	0.0751	0.0921	0.0801	0.0754	0.0666	0.0616	0.0614
	0.0590	0.0551	0.0489	0.0393	0.0277	0.0198	0.0106	0.0059	0.0043	0.0039
	0.0053	0.0040	0.0026	0.0018	0.0120					
2	0.0379	0.0460	0.0527	0.0480	0.0636	0.0761	0.0556	0.0481	0.0502	0.0560
	0.0687	0.0705	0.0668	0.0644	0.0436	0.0325	0.0213	0.0152	0.0133	0.0103
	0.0155	0.0130	0.0083	0.0039	0.0185					
3	0.0379	0.0460	0.0527	0.0480	0.0636	0.0761	0.0556	0.0481	0.0502	0.0560
	0.0687	0.0705	0.0668	0.0644	0.0436	0.0325	0.0213	0.0152	0.0133	0.0103
	0.0155	0.0130	0.0083	0.0039	0.0185					
4	0.0722	0.0777	0.1109	0.0662	0.0942	0.0678	0.0476	0.0370	0.0305	0.0460
	0.0602	0.0524	0.0401	0.0418	0.0320	0.0240	0.0128	0.0083	0.0076	0.0078
	0.0161	0.0141	0.0085	0.0050	0.0192					
5	0.0722	0.0777	0.1109	0.0662	0.0942	0.0678	0.0476	0.0370	0.0305	0.0460
	0.0602	0.0524	0.0401	0.0418	0.0320	0.0240	0.0128	0.0083	0.0076	0.0078
	0.0161	0.0141	0.0085	0.0050	0.0192					
16	0.0738	0.0799	0.0708	0.0632	0.0534	0.0474	0.0403	0.0328	0.0284	0.0234
	0.0265	0.0224	0.0275	0.0449	0.0412	0.0266	0.0386	0.0445	0.0417	0.0325
	0.0220	0.0179	0.0135	0.0146	0.0722					

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Chester County, 2005 Control Strategy

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_CHES05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0151

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL PROGRAM             : 2 N
FUEL RVP                 : 8.7
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : CHES99ag.dat
DIESEL FRACTIONS         :
0.0003 0.0001 0.0002 0.0002 0.0003 0.0002 0.0001 0.0003 0.0009 0.0017
0.0022 0.0024 0.0017 0.0028 0.0068 0.0039 0.0029 0.0068 0.0070 0.0000
0.0010 0.0028 0.0000 0.0000 0.0008
0.1541 0.1094 0.0692 0.0909 0.0659 0.0618 0.0367 0.0274 0.0249 0.0336
0.0285 0.0408 0.0267 0.0208 0.0381 0.0216 0.0088 0.0313 0.0202 0.0291
0.0124 0.0091 0.0131 0.0093 0.0097
0.1541 0.1094 0.0692 0.0909 0.0659 0.0618 0.0367 0.0274 0.0249 0.0336
0.0285 0.0408 0.0267 0.0208 0.0381 0.0216 0.0088 0.0313 0.0202 0.0291
0.0124 0.0091 0.0131 0.0093 0.0097
0.0105 0.0061 0.0392 0.0191 0.0208 0.0219 0.0064 0.0168 0.0329 0.0240
0.0088 0.0217 0.0254 0.0334 0.0525 0.0211 0.0070 0.0000 0.0122 0.0000
0.0000 0.0000 0.0000 0.0000 0.0051
0.0105 0.0061 0.0392 0.0191 0.0208 0.0219 0.0064 0.0168 0.0329 0.0240
0.0088 0.0217 0.0254 0.0334 0.0525 0.0211 0.0070 0.0000 0.0122 0.0000
0.0000 0.0000 0.0000 0.0000 0.0051
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
```

```
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM          : 1 2003 2050 1 TRC OBD I/M
I/M PROGRAM          : 2 1997 2050 1 TRC ASM 5015 FINAL
I/M PROGRAM          : 3 2003 2050 1 TRC EVAP OBD & GC
I/M PROGRAM          : 4 1997 2050 1 TRC GC
I/M MODEL YEARS      : 1 1996 2050
I/M MODEL YEARS      : 2 1981 1995
I/M MODEL YEARS      : 3 1996 2050
I/M MODEL YEARS      : 4 1975 1995
I/M VEHICLES         : 1 22222 11111111 1
I/M VEHICLES         : 2 22222 11111111 1
I/M VEHICLES         : 3 22222 11111111 1
I/M VEHICLES         : 4 22222 11111111 1
I/M STRINGENCY       : 1 20
I/M STRINGENCY       : 2 20
I/M COMPLIANCE       : 1 96.0
I/M COMPLIANCE       : 2 96.0
I/M COMPLIANCE       : 3 96.0
I/M COMPLIANCE       : 4 96.0
I/M WAIVER RATES     : 1 3.0 3.0
I/M WAIVER RATES     : 2 3.0 3.0
I/M WAIVER RATES     : 3 3.0 3.0
I/M WAIVER RATES     : 4 3.0 3.0
I/M EFFECTIVENES     : 1.00 1.00 1.00
ANTI-TAMP PROGRAM    : 97 75 50 22222 11111111 1  11 096. 22212222

SCENARIO RECORD      :[01 0151]  1
CALENDAR YEAR        :2005
EVALUATION MONTH     : 7
ABSOLUTE HUMIDITY    :  72.6
SEASON               : 1
VMT FRACTIONS        :
                        .385  .070  .234  .072  .033  .065  .006  .005
                        .004  .014  .017  .019  .066  .003  .002  .005
VMT BY FACILITY      :V015101F.def
VMT BY HOUR          :V015101H.def
SPEED VMT            :V015101S.def
                     .
                     .
END OF RUN           :
```

(Scenario repeated for each area functional class combination)

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Registration Distribution used in Mobile 6

REG DIST

1	0.0475	0.0779	0.0784	0.0818	0.1006	0.0854	0.0765	0.0655	0.0604	0.0587
	0.0549	0.0498	0.0430	0.0349	0.0234	0.0171	0.0090	0.0052	0.0038	0.0033
	0.0044	0.0032	0.0022	0.0016	0.0115					
2	0.0434	0.0504	0.0559	0.0512	0.0722	0.0776	0.0569	0.0499	0.0522	0.0540
	0.0649	0.0722	0.0628	0.0593	0.0387	0.0301	0.0196	0.0132	0.0119	0.0094
	0.0138	0.0113	0.0078	0.0037	0.0176					
3	0.0434	0.0504	0.0559	0.0512	0.0722	0.0776	0.0569	0.0499	0.0522	0.0540
	0.0649	0.0722	0.0628	0.0593	0.0387	0.0301	0.0196	0.0132	0.0119	0.0094
	0.0138	0.0113	0.0078	0.0037	0.0176					
4	0.0779	0.0804	0.1130	0.0728	0.0907	0.0710	0.0513	0.0342	0.0348	0.0444
	0.0557	0.0528	0.0387	0.0466	0.0281	0.0194	0.0117	0.0097	0.0067	0.0084
	0.0129	0.0110	0.0082	0.0035	0.0161					
5	0.0779	0.0804	0.1130	0.0728	0.0907	0.0710	0.0513	0.0342	0.0348	0.0444
	0.0557	0.0528	0.0387	0.0466	0.0281	0.0194	0.0117	0.0097	0.0067	0.0084
	0.0129	0.0110	0.0082	0.0035	0.0161					
16	0.0667	0.0729	0.0627	0.0570	0.0467	0.0424	0.0349	0.0292	0.0256	0.0256
	0.0275	0.0239	0.0252	0.0439	0.0454	0.0354	0.0410	0.0611	0.0475	0.0357
	0.0252	0.0224	0.0162	0.0156	0.0703					

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Delaware County, 2005 Control Strategy

```
REPORT FILE              : m6output.out      REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_DELA05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0231

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL PROGRAM             : 2 N
FUEL RVP                 : 8.7
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : DELA99ag.dat
DIESEL FRACTIONS         :
0.0002 0.0004 0.0004 0.0004 0.0003 0.0002 0.0001 0.0003 0.0009 0.0017
0.0013 0.0022 0.0010 0.0025 0.0023 0.0029 0.0009 0.0011 0.0007 0.0008
0.0012 0.0000 0.0000 0.0000 0.0003
0.0484 0.0369 0.0287 0.0408 0.0467 0.0425 0.0244 0.0271 0.0255 0.0342
0.0240 0.0272 0.0167 0.0185 0.0206 0.0206 0.0163 0.0105 0.0121 0.0458
0.0084 0.0000 0.0203 0.0099 0.0185
0.0484 0.0369 0.0287 0.0408 0.0467 0.0425 0.0244 0.0271 0.0255 0.0342
0.0240 0.0272 0.0167 0.0185 0.0206 0.0206 0.0163 0.0105 0.0121 0.0458
0.0084 0.0000 0.0203 0.0099 0.0185
0.0037 0.0056 0.0215 0.0179 0.0189 0.0304 0.0149 0.0090 0.0050 0.0090
0.0042 0.0067 0.0110 0.0128 0.0128 0.0000 0.0000 0.0000 0.0132 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.0037 0.0056 0.0215 0.0179 0.0189 0.0304 0.0149 0.0090 0.0050 0.0090
0.0042 0.0067 0.0110 0.0128 0.0128 0.0000 0.0000 0.0000 0.0132 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
```

```
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM          : 1 2003 2050 1 TRC OBD I/M
I/M PROGRAM          : 2 1997 2050 1 TRC ASM 5015 FINAL
I/M PROGRAM          : 3 2003 2050 1 TRC EVAP OBD & GC
I/M PROGRAM          : 4 1997 2050 1 TRC GC
I/M MODEL YEARS      : 1 1996 2050
I/M MODEL YEARS      : 2 1981 1995
I/M MODEL YEARS      : 3 1996 2050
I/M MODEL YEARS      : 4 1975 1995
I/M VEHICLES         : 1 22222 11111111 1
I/M VEHICLES         : 2 22222 11111111 1
I/M VEHICLES         : 3 22222 11111111 1
I/M VEHICLES         : 4 22222 11111111 1
I/M STRINGENCY       : 1 20
I/M STRINGENCY       : 2 20
I/M COMPLIANCE       : 1 96.0
I/M COMPLIANCE       : 2 96.0
I/M COMPLIANCE       : 3 96.0
I/M COMPLIANCE       : 4 96.0
I/M WAIVER RATES     : 1 3.0 3.0
I/M WAIVER RATES     : 2 3.0 3.0
I/M WAIVER RATES     : 3 3.0 3.0
I/M WAIVER RATES     : 4 3.0 3.0
I/M EFFECTIVENES     : 1.00 1.00 1.00
ANTI-TAMP PROGRAM    : 97 75 50 22222 11111111 1  11 096. 22212222


SCENARIO RECORD      :[02 0231]  2
CALENDAR YEAR        :2005
EVALUATION MONTH     : 7
ABSOLUTE HUMIDITY    :  72.6
SEASON               : 1
VMT FRACTIONS        :
                       .426  .078  .260  .080  .037  .036  .004  .003
                       .002  .008  .010  .010  .037  .002  .001  .006
VMT BY FACILITY      :V023102F.def
VMT BY HOUR          :V023102H.def
SPEED VMT            :V023102S.def


END OF RUN           :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
   1  0.0575  0.0768  0.0721  0.0726  0.0897  0.0775  0.0734  0.0631  0.0594  0.0596
      0.0580  0.0538  0.0484  0.0400  0.0286  0.0202  0.0112  0.0061  0.0049  0.0042
      0.0054  0.0038  0.0025  0.0015  0.0097
   2  0.0347  0.0454  0.0528  0.0451  0.0613  0.0740  0.0553  0.0483  0.0544  0.0550
      0.0681  0.0708  0.0686  0.0708  0.0436  0.0357  0.0226  0.0155  0.0135  0.0107
      0.0147  0.0114  0.0081  0.0041  0.0155
   3  0.0347  0.0454  0.0528  0.0451  0.0613  0.0740  0.0553  0.0483  0.0544  0.0550
      0.0681  0.0708  0.0686  0.0708  0.0436  0.0357  0.0226  0.0155  0.0135  0.0107
      0.0147  0.0114  0.0081  0.0041  0.0155
   4  0.0893  0.0729  0.1108  0.0782  0.0913  0.0703  0.0441  0.0366  0.0331  0.0459
      0.0585  0.0491  0.0374  0.0448  0.0322  0.0230  0.0123  0.0068  0.0062  0.0076
      0.0145  0.0084  0.0059  0.0039  0.0169
   5  0.0893  0.0729  0.1108  0.0782  0.0913  0.0703  0.0441  0.0366  0.0331  0.0459
      0.0585  0.0491  0.0374  0.0448  0.0322  0.0230  0.0123  0.0068  0.0062  0.0076
      0.0145  0.0084  0.0059  0.0039  0.0169
  16  0.0616  0.0689  0.0705  0.0544  0.0561  0.0412  0.0394  0.0335  0.0249  0.0241
      0.0264  0.0297  0.0297  0.0458  0.0482  0.0350  0.0425  0.0555  0.0433  0.0381
      0.0226  0.0163  0.0124  0.0100  0.0699
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Montgomery County, 2005 Control Strategy

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_MONT05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0461

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL PROGRAM             : 2 N
FUEL RVP                 : 8.7
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : MONT99ag.dat
DIESEL FRACTIONS         :
0.0000 0.0001 0.0001 0.0003 0.0003 0.0002 0.0001 0.0001 0.0021 0.0040
0.0042 0.0037 0.0019 0.0030 0.0053 0.0045 0.0013 0.0025 0.0006 0.0019
0.0015 0.0007 0.0000 0.0000 0.0002
0.0789 0.0402 0.0610 0.1011 0.0898 0.0664 0.0379 0.0295 0.0384 0.0368
0.0454 0.0423 0.0284 0.0171 0.0318 0.0208 0.0147 0.0197 0.0126 0.0276
0.0063 0.0120 0.0063 0.0000 0.0121
0.0789 0.0402 0.0610 0.1011 0.0898 0.0664 0.0379 0.0295 0.0384 0.0368
0.0454 0.0423 0.0284 0.0171 0.0318 0.0208 0.0147 0.0197 0.0126 0.0276
0.0063 0.0120 0.0063 0.0000 0.0121
0.0186 0.0108 0.0312 0.0296 0.0263 0.0322 0.0079 0.0083 0.0047 0.0051
0.0075 0.0119 0.0073 0.0238 0.0140 0.0073 0.0040 0.0000 0.0000 0.0000
0.0066 0.0042 0.0070 0.0000 0.0062
0.0186 0.0108 0.0312 0.0296 0.0263 0.0322 0.0079 0.0083 0.0047 0.0051
0.0075 0.0119 0.0073 0.0238 0.0140 0.0073 0.0040 0.0000 0.0000 0.0000
0.0066 0.0042 0.0070 0.0000 0.0062
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.0966
```

```
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM          : 1 2003 2050 1 TRC OBD I/M
I/M PROGRAM          : 2 1997 2050 1 TRC ASM 5015 FINAL
I/M PROGRAM          : 3 2003 2050 1 TRC EVAP OBD & GC
I/M PROGRAM          : 4 1997 2050 1 TRC GC
I/M MODEL YEARS      : 1 1996 2050
I/M MODEL YEARS      : 2 1981 1995
I/M MODEL YEARS      : 3 1996 2050
I/M MODEL YEARS      : 4 1975 1995
I/M VEHICLES         : 1 22222 11111111 1
I/M VEHICLES         : 2 22222 11111111 1
I/M VEHICLES         : 3 22222 11111111 1
I/M VEHICLES         : 4 22222 11111111 1
I/M STRINGENCY       : 1 20
I/M STRINGENCY       : 2 20
I/M COMPLIANCE       : 1 96.0
I/M COMPLIANCE       : 2 96.0
I/M COMPLIANCE       : 3 96.0
I/M COMPLIANCE       : 4 96.0
I/M WAIVER RATES     : 1 3.0 3.0
I/M WAIVER RATES     : 2 3.0 3.0
I/M WAIVER RATES     : 3 3.0 3.0
I/M WAIVER RATES     : 4 3.0 3.0
I/M EFFECTIVENES     : 1.00 1.00 1.00
ANTI-TAMP PROGRAM    : 97 75 50 22222 11111111 1  11 096. 22212222


SCENARIO RECORD      :[01 0461]  1
CALENDAR YEAR        :2005
EVALUATION MONTH     : 7
ABSOLUTE HUMIDITY    :  72.6
SEASON               : 1
VMT FRACTIONS        :
                        .408  .075  .249  .077  .035  .048  .005  .004
                        .003  .011  .013  .014  .049  .002  .001  .006
VMT BY FACILITY      :V046101F.def
VMT BY HOUR          :V046101H.def
SPEED VMT            :V046101S.def

END OF RUN           :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
  1  0.0871 0.1197 0.1136 0.0841 0.0866 0.0694 0.0619 0.0538 0.0507 0.0495
     0.0459 0.0422 0.0372 0.0289 0.0206 0.0143 0.0070 0.0043 0.0031 0.0027
     0.0036 0.0026 0.0019 0.0012 0.0082
  2  0.0505 0.1172 0.1005 0.0566 0.0589 0.0614 0.0502 0.0400 0.0429 0.0459
     0.0576 0.0569 0.0528 0.0532 0.0345 0.0261 0.0166 0.0123 0.0097 0.0080
     0.0130 0.0102 0.0065 0.0035 0.0151
  3  0.0505 0.1172 0.1005 0.0566 0.0589 0.0614 0.0502 0.0400 0.0429 0.0459
     0.0576 0.0569 0.0528 0.0532 0.0345 0.0261 0.0166 0.0123 0.0097 0.0080
     0.0130 0.0102 0.0065 0.0035 0.0151
  4  0.0860 0.1270 0.1647 0.0824 0.0924 0.0650 0.0387 0.0274 0.0244 0.0375
     0.0457 0.0383 0.0311 0.0319 0.0244 0.0157 0.0095 0.0072 0.0049 0.0050
     0.0115 0.0091 0.0054 0.0024 0.0123
  5  0.0860 0.1270 0.1647 0.0824 0.0924 0.0650 0.0387 0.0274 0.0244 0.0375
     0.0457 0.0383 0.0311 0.0319 0.0244 0.0157 0.0095 0.0072 0.0049 0.0050
     0.0115 0.0091 0.0054 0.0024 0.0123
 16  0.0641 0.0740 0.0668 0.0587 0.0518 0.0466 0.0384 0.0357 0.0244 0.0252
     0.0274 0.4869 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
     0.0000 0.0000 0.0000 0.0000 0.0000
```

Philadelphia 5 – County Area MOBILE Input Files
2005 Control Strategy

Philadelphia County, 2005 Control Strategy

```
REPORT FILE              : m6output.out     REPLACE
DATABASE OUTPUT          :
WITH FIELDNAMES          :
EMISSIONS TABLE          : M6OUTPUT_PHIL05A.TB1  REPLACE
POLLUTANTS               : HC CO NOX
AGGREGATED OUTPUT        :
RUN DATA                 : 0673

MIN/MAX TEMPERATURE      : 70.7  93.4
94+ LDG IMP              : NLEVNE.D
FUEL PROGRAM             : 2 N
FUEL RVP                 : 8.7
EXPRESS HC AS VOC        :
EXPAND EXHAUST           :
EXPAND EVAPORATIVE       :
NO REFUELING             :
REG DISTRIBUTION         : PHIL99ag.dat
DIESEL FRACTIONS         :
0.0000 0.0004 0.0003 0.0005 0.0006 0.0007 0.0001 0.0003 0.0042 0.0063
0.0056 0.0044 0.0013 0.0014 0.0017 0.0022 0.0004 0.0008 0.0011 0.0010
0.0003 0.0000 0.0000 0.0007 0.0004
0.1014 0.0870 0.1011 0.0696 0.1107 0.0726 0.0739 0.0486 0.0438 0.0508
0.0534 0.0479 0.0228 0.0245 0.0247 0.0186 0.0076 0.0113 0.0108 0.0262
0.0212 0.0110 0.0085 0.0058 0.0093
0.1014 0.0870 0.1011 0.0696 0.1107 0.0726 0.0739 0.0486 0.0438 0.0508
0.0534 0.0479 0.0228 0.0245 0.0247 0.0186 0.0076 0.0113 0.0108 0.0262
0.0212 0.0110 0.0085 0.0058 0.0093
0.0043 0.0110 0.0206 0.0322 0.0302 0.0323 0.0110 0.0019 0.0267 0.0175
0.0250 0.0149 0.0052 0.0057 0.0179 0.0060 0.0041 0.0000 0.0000 0.0056
0.0037 0.0000 0.0000 0.0000 0.0022
0.0043 0.0110 0.0206 0.0322 0.0302 0.0323 0.0110 0.0019 0.0267 0.0175
0.0250 0.0149 0.0052 0.0057 0.0179 0.0060 0.0041 0.0000 0.0000 0.0056
0.0037 0.0000 0.0000 0.0000 0.0022
0.1998 0.2578 0.2515 0.3263 0.2784 0.2963 0.2384 0.2058 0.1756 0.1958
0.2726 0.2743 0.3004 0.2918 0.2859 0.0138 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
0.6774 0.7715 0.7910 0.8105 0.8068 0.8280 0.8477 0.7940 0.7488 0.7789
0.7842 0.6145 0.5139 0.5032 0.4277 0.0079 0.0000 0.0000 0.0001 0.0003
0.0010 0.0028 0.0248 0.0000 0.0000
0.8606 0.8473 0.8048 0.8331 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178
0.2207 0.1968 0.1570 0.0738 0.0341 0.0414 0.0003 0.0000 0.0000 0.0000
0.0259 0.0078 0.0004 0.0090 0.0112
0.4647 0.4384 0.3670 0.4125 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615
0.0383 0.0333 0.0255 0.0111 0.0049 0.0060 0.0000 0.0000 0.0000 0.0000
0.0037 0.0011 0.0001 0.0013 0.0016
0.6300 0.6078 0.5246 0.5767 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734
0.4705 0.4525 0.4310 0.3569 0.3690 0.4413 0.3094 0.1679 0.1390 0.0808
0.0476 0.0365 0.0288 0.0274 0.0297
0.8563 0.8443 0.7943 0.8266 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588
0.7567 0.7431 0.7261 0.6602 0.6717 0.7344 0.6107 0.4140 0.3610 0.2353
0.1489 0.1170 0.0940 0.0897 0.096
```

```
0.9992 0.9989 0.9987 0.9989 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978
0.9980 0.9979 0.9976 0.9969 0.9978 0.9982 0.9974 0.9965 0.9964 0.9949
0.9920 0.9936 0.9819 0.9812 0.9720
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.8857 0.8525 0.8795 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345
0.6733 0.5155 0.3845 0.3238 0.3260 0.2639 0.0594 0.0460 0.0291 0.0240
0.0086 0.0087 0.0000 0.0000 0.0000

I/M PROGRAM              : 1 2003 2050 1 TRC OBD I/M
I/M PROGRAM              : 2 1997 2050 1 TRC ASM 5015 FINAL
I/M PROGRAM              : 3 2003 2050 1 TRC EVAP OBD & GC
I/M PROGRAM              : 4 1997 2050 1 TRC GC
I/M MODEL YEARS          : 1 1996 2050
I/M MODEL YEARS          : 2 1981 1995
I/M MODEL YEARS          : 3 1996 2050
I/M MODEL YEARS          : 4 1975 1995
I/M VEHICLES             : 1 22222 11111111 1
I/M VEHICLES             : 2 22222 11111111 1
I/M VEHICLES             : 3 22222 11111111 1
I/M VEHICLES             : 4 22222 11111111 1
I/M STRINGENCY           : 1 20
I/M STRINGENCY           : 2 20
I/M COMPLIANCE           : 1 96.0
I/M COMPLIANCE           : 2 96.0
I/M COMPLIANCE           : 3 96.0
I/M COMPLIANCE           : 4 96.0
I/M WAIVER RATES         : 1 3.0 3.0
I/M WAIVER RATES         : 2 3.0 3.0
I/M WAIVER RATES         : 3 3.0 3.0
I/M WAIVER RATES         : 4 3.0 3.0
I/M EFFECTIVENES         : 1.00 1.00 1.00
ANTI-TAMP PROGRAM        : 97 75 50 22222 11111111 1  11 096. 22212222

SCENARIO RECORD          :[11 0673] 11
CALENDAR YEAR            :2005
EVALUATION MONTH         : 7
ABSOLUTE HUMIDITY        :  72.6
SEASON                   : 1
VMT FRACTIONS            :
                           .426  .078  .260  .080  .037  .036  .004  .003
                           .002  .008  .010  .010  .037  .002  .001  .006
VMT BY FACILITY          :V067311F.def
VMT BY HOUR              :V067311H.def
SPEED VMT                :V067311S.def
          .
          .
END OF RUN               :
```

(Scenario repeated for each area functional class combination)

Registration Distribution used in Mobile 6

```
REG DIST
  1 0.0409 0.0541 0.0534 0.0588 0.0757 0.0650 0.0628 0.0594 0.0589 0.0659
    0.0682 0.0695 0.0662 0.0571 0.0429 0.0310 0.0170 0.0100 0.0076 0.0060
    0.0080 0.0055 0.0041 0.0028 0.0091
  2 0.0298 0.0434 0.0430 0.0407 0.0461 0.0529 0.0401 0.0382 0.0401 0.0489
    0.0595 0.0729 0.0735 0.0763 0.0602 0.0494 0.0356 0.0240 0.0215 0.0174
    0.0234 0.0175 0.0137 0.0067 0.0250
  3 0.0298 0.0434 0.0430 0.0407 0.0461 0.0529 0.0401 0.0382 0.0401 0.0489
    0.0595 0.0729 0.0735 0.0763 0.0602 0.0494 0.0356 0.0240 0.0215 0.0174
    0.0234 0.0175 0.0137 0.0067 0.0250
  4 0.0552 0.0574 0.0802 0.0563 0.0757 0.0635 0.0429 0.0417 0.0355 0.0540
    0.0537 0.0530 0.0459 0.0553 0.0396 0.0262 0.0193 0.0158 0.0160 0.0142
    0.0210 0.0221 0.0121 0.0074 0.0358
  5 0.0552 0.0574 0.0802 0.0563 0.0757 0.0635 0.0429 0.0417 0.0355 0.0540
    0.0537 0.0530 0.0459 0.0553 0.0396 0.0262 0.0193 0.0158 0.0160 0.0142
    0.0210 0.0221 0.0121 0.0074 0.0358
 16 0.0773 0.0833 0.0681 0.0576 0.0482 0.0508 0.0429 0.0337 0.0232 0.0287
    0.0232 0.4632 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
    0.0000 0.0000 0.0000 0.0000 0.0000
```