Reasonably Available Control Measures Analyses

Federal Clean Air Act Sections 172(c)(1) and (c)(2) require the District to demonstrate that it has adopted all control measures necessary to attain the 2008 federal 8-hour ozone standard as expeditiously as practicable and to meet Reasonable Further Progress (RFP) requirements. Reasonably Available Control Measures (RACM) applies to stationary source control measures, Transportation Control Measures, and mobile source control measures.

A potential control measure is considered "reasonably available" and must be implemented if it would advance attainment by at least one year, either alone or in combination with other reasonably available control measures. This means the combined emission reductions from RACM must be sufficient to reduce the emission inventory projected for 2019 (or earlier) to that currently projected for 2020, the attainment year, or lower. If such emission reductions can be demonstrated, the combined RACM measures must be implemented.

As shown in Table K-3, of Appendix K, *Ventura County Weight of Evidence Assessment*, the projected NOx and ROG emissions are 31 and 32 tons per day, respectively, in the attainment year 2020. The projected 2019 NOx and ROG emissions are 33 and 32 tons per day respectively. Therefore, in order to be considered RACM, the combined control measures must reduce NOx emissions by two tons per day.

Stationary Source RACM

District stationary source ROG and/or NOx prohibitory rules that were not fully addressed in the District's 2014 RACT SIP were evaluated for potential RACM emission reductions for the 2016 AQMP. Staff compared District rules to rules adopted by other air districts with higher or "worse" nonattainment classifications, namely the SCAQMD and the San Joaquin Valley Air Pollution Control District (SJVAPCD). Staff also reviewed rules from other air districts such as the Bay Area Air Quality Management District (BAAQMD).

District staff also identified a few rules from other air districts that apply to unregulated source categories in Ventura County. District staff conducted preliminary evaluations of the potential emission reductions, including the cost effectiveness and timing of the potential reductions.

A very conservative estimate of the total emission reductions achievable through potential RACM new and amended rules are as follows:

NOx: 0.008 tons per day
ROG: 0.25 tons per day

As noted above, in order to advance attainment by one year, emission reductions of at least two tons of NOx per day must be achieved. The potential RACM identified by the District are a tiny fraction of the required NOx reductions.

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Since the ROG inventory remains stable for the two years prior to the District's modeled attainment, it is unclear how much ROG emissions reductions would be required to advance the attainment date. However, it is clear that reducing ROG emissions less than 1% of the county's anthropogenic emissions inventory is insufficient to advance the attainment date. Such a reduction is well within the margin of error for the emissions inventory and the annual variability of emissions due to other factors.

Appendix E, *Stationary Source Reasonably Available Control Measure Assessment*, provides the details of the stationary source RACM evaluations.

Transportation Control Measure RACM

The Clean Air Act requires a review of RACM for TCMs during AQMP development. Review of RACM provides an analysis of all potential TCMs that can be included as part of the control strategy in the AQMP. TCMs must be both technologically and economically feasible and must advance the projected attainment date of the air quality standard by at least one year to be considered RACM.

Appendix F, *Ventura County Transportation Control Measure Reasonably Available Control Measure Assessment*, lists the TCM RACM assessments conducted for the 2016 AQMP.

Mobile Source RACM

Appendix G, *Ventura County Mobile Source Reasonably Available Control Measures Assessment*, presents California's emission standards, fuel specifications, and incentive programs for heavy-duty vehicles that are technologically and economically feasible in California, including Ventura County.

RACM Conclusion

The combination of feasible RACM measures (stationary source, mobile source, and transportation control measures) not already implemented in Ventura county would provide only a tiny fraction of the 2.0 tons NOx per day reductions needed to advance the county's attainment date by at least one year. Therefore, none of the potential additional control measures are reasonably available, and therefore, none require adoption for the purposes of the 2016 AQMP.

Incentive Programs

The District participates in three clean air incentive programs to help Ventura County meet state and federal clean air standards: the *Carl Moyer Memorial Air Quality Standards Attainment Program*, the *Lower Emissions School Bus Program,* and the *Clean Air Fund*. Below are summaries of these programs. Further information regarding the District's clean air incentive programs is available on the District's Grants/Incentive Programs website.

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APPENDIX E

VENTURA COUNTY

STATIONARY SOURCE

REASONABLY AVAILABLE CONTROL MEASURE ASSESSMENT

Background

Federal Clean Air Act Sections 172(c)(1) and (c)(2) require the Ventura County Air Pollution Control District (District) to demonstrate that it has adopted all control measures necessary to attain the 2008 federal 8-hour ozone standard as expeditiously as practicable and to meet Reasonable Further Progress (RFP) requirements. Reasonably Available Control Measures (RACM) applies to stationary source control measures, transportation control measures, and mobile source control measures. Reasonably Available Control Technology, or RACT, is a subset of stationary source RACM.

A potential control measure is considered "reasonably available" and must be implemented if it would advance attainment by at least one year, either alone or in combination with other reasonably available control measures. This means the combined emission reductions from RACM must be sufficient to reduce the emission inventory projected for 2019 (or earlier) to the inventory currently projected for 2020, the attainment year, or lower. If such emission reductions can be demonstrated, the combined RACM measures must be implemented.

Stationary Source RACM

The District has been classified as a serious nonattainment area for all historical ozone National Ambient Air Quality Standards (NAAQS). The District has a mature and comprehensive set of prohibitory rules which are some of the strictest in the nation. The stringency and comprehensiveness of existing reactive organic gases (ROG) and nitrogen oxides (NOx) emission control requirements in the District significantly reduce the availability of new measures that could provide additional emission reductions sufficient to advance the attainment year.

As shown in Table K-3 of Appendix K, *Ventura County Weight of Evidence Assessment,* the projected anthropogenic NOx and ROG emissions are 31 and 32 tons per day, respectively, in the attainment year 2020. The projected 2019 NOx and ROG emissions are 33 and 32 tons per day respectively. Therefore, in order to be considered RACM, the combined control measures must reduce NOx emissions by two tons per day.

In addition, Table K-3 shows the projected ROG emissions are stable at 32 tons per day for three years from 2018 through 2020. During this time the ozone design value is projected to decline by 2 ppb, apparently due to NOx emissions reductions. Therefore, at this stage in the attainment planning for Ventura County, it is unclear what level of anthropogenic ROG emission reductions would advance the attainment year.

2014 RACT State Implementation Plan (SIP)

The District approved its RACT SIP on June 10, 2014 and sent it to the California Air Resources Board (ARB) for submittal to the United States Environmental Protection Agency (EPA). ARB submitted the District's RACT SIP to EPA on July 18, 2014 and EPA took final action to approve it on January 15, 2015 (80 FR 2016-2018). The RACT SIP found that all applicable

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District rules that apply to ozone precursor emissions fulfill RACT requirements for the 8-hour ozone NAAQS.

Table E-1, *District Rules Determined to Meet RACT in 2014 RACT SIP*, lists the rules determined to meet RACT in the 2014 RACT SIP. Since these rules were determined to be compliant with RACT requirements, they were not evaluated further under this RACM analysis.

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Table E-1
District Rules Determined to Meet RACT in 2014 RACT SIP

VCAPCD Rule	Rule Name
59	Electrical Power Generating Equipment Oxides of Nitrogen Emissions
62.6	Ethylene Oxide - Sterilization and Aeration
70	Storage and Transfer of Gasoline
71.1	Crude Oil Production and Separation
71.2	Storage of Reactive Organic Compound Liquids
71.3	Transfer of Organic Reactive Compound Liquids
71.4	Petroleum Sumps, Pits, Ponds, and Well Cellars
71.5	Glycol Dehydrators
74.3	Paper, Fabric and Film Coating Operations
74.4	Cutback Asphalt
74.5.1	Petroleum Solvent Dry Cleaning
74.5.2	Synthetic Solvent Dry Cleaning
74.6	Surface Cleaning and Degreasing
74.6.1	Batch Loaded Vapor Degreasers
74.7	Fugitive Emissions of ROC at Petroleum Refineries and Chemical Plants
74.9	Stationary Internal Combustion Engines
74.10	Components at Crude Oil and Natural Gas Producing and Processing Facilities
74.11	Natural Gas-Fired Residential Water Heaters
74.11.1	Large Water Heaters and Small Boilers
74.12	Surface Coating of Metal Parts and Products
74.13	Aerospace Assembly and Component Manufacturing Operations
74.15	Boilers, Steam Generators and Process Heaters
74.15.1	Boilers, Steam Generators and Process Heaters
74.16	Oilfield Drilling Operations
74.17.1	Municipal Solid Waste Landfills
74.18	Motor Vehicle and Mobile Equipment Coating Operations
74.19	Graphic Arts
74.20	Adhesives and Sealants
74.23	Stationary Gas Turbines
74.24	Marine Coatings Operations
74.24.1	Pleasure Craft Coating and Commercial Boatyard Operations
74.26	Crude Oil Storage Tank Degassing
74.27	Gasoline and ROC Liquid Storage Tank Degassing Operations
74.30	Wood Products Coating

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RACM Evaluations

District ROG and/or NOx prohibitory rules that were not fully addressed in the District's 2014 RACT SIP were evaluated for potential RACM emission reductions. Staff compared District rules to rules adopted by other air districts with higher or "worse" nonattainment classifications, namely the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD). Staff also reviewed rules from other air districts such as the Bay Area Air Quality Management District (BAAQMD). Table E-2 lists the District rules reviewed for the stationary source RACM requirement.

District staff also identified a few rules from other districts that apply to unregulated source categories in Ventura County. District staff conducted preliminary evaluations of the potential emission reductions, including the cost effectiveness and timing of the potential reductions. The identified source categories are shown in Table E-3.

A very conservative estimate of the total emission reductions achievable under RACM with new and amended District rules are as follows:

NOx: 0.008 tons per day

ROG: 0.25 tons per day

As noted above, in order to advance attainment by one year, emission reductions of at least two tons of NOx per day must be achieved. The potential RACM identified by the District are a tiny fraction of the required NOx reductions.

Since the ROG inventory remains stable for the two years prior to the District's modeled attainment, it is unclear how much ROG emissions reductions would be required to advance the attainment date. However, it is clear that reducing ROG emissions less than 1% of the anthropogenic inventory is insufficient to advance the attainment date. Such a reduction is well within the margin of error for the emissions inventory and the annual variability of emissions due to other factors.

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Table E-2
District Rules Evaluated for RACM Determination

VCAPCD Rule	Rule Name	Other District Rule Number(s)	Other District Rule(s) Stricter?	NOx Emission Reduction Potential (tons/day)	ROG Emission Reduction Potential (tons/day)
63	Separation and Combination of Emissions	N/A*	N/A	N/A	N/A
69	Asphalt Air Blowing	SC 470	NO	None	None
74.2	Architectural Coatings	This rule will be updated as discussed in Chapter 3 as part of control measure R-303-2017			
74.8	Refinery Vacuum Producing Systems, Wastewater Separators, and Process Turnarounds	No Sources of this type remain in Ventura County			
74.14	Polyester Resin Material Operations	SC 1162 SJV 4684	NO	None	None
74.19.1	Screen Printing Operations	SC 1171	YES	None	0.013
74.21	Semiconductor Manufacturing	SC 1164	YES	None	0.068
74.22	Natural Gas-Fired, Central Fan-Type Furnaces	This rule will be updated as discussed in Chapter 3 as part of control measure N-110-2016			
74.25	Restaurant Cooking Operations	SC 1138 SJV 4692	NO†	None	None
74.28	Asphalt Roofing Operations	None	NO	None	None
74.29	Soil Decontamination Operations	SC 1166 SVJ 4651 BA 8-40	NO	None	None
74.31	Metalworking Fluids and Direct Contact Lubricants	SC 1144	NO	None	None
74.34	NOx Reductions from Miscellaneous Sources	SC 1147 SJV 4309	YES	None†	None

Notes:
SC = South Coast Air Quality Management District
SJV = San Joaquin Valley Air Pollution Control District
* N/A: Not applicable. This rule does not include restrictions or mandate reductions in NOx or ROG emissions.
† See discussion below

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Table E-3
Stationary Source Categories for Which Other Districts Have Adopted Rules and VCAPCD Has No Equivalent Rule

Rule Name	Other District Rule Number(s)	Applicable Sources in Ventura County?	NOx Emission Reduction Potential (tons/day)	ROG Emission Reduction Potential (tons/day)
Composting and Organic Material Conversion Operations	SC 1133 SJV 4566	New District Rule 74.32 will be adopted as discussed in Chapter 3 as part of control measure R-607		
Flares at Petroleum Refineries	BA 12-12 SC 1118	NO	None	None
Vacuum Truck Operations	BA 8-53	YES	Potential Increase*	0.16
Emissions of Oxides of Nitrogen from Commercial Food Ovens	SC 1153.1	YES	0.008	None
Food Products Manufacturing and Processing Operations	SC 1131	YES†	None	0.006

Notes:
BA = Bay Area Air Quality Management District
SC = South Coast Air Quality Management District
SJV = San Joaquin Valley Air Pollution Control District
* If a combustion process is used to comply with emissions abatement requirements, this rule will increase NOx emissions
† See discussion below

The summaries below discuss the RACM evaluations and provide a determination whether rule updates or new rules could be considered RACM.

RULE 74.14: POLYESTER RESIN MATERIAL OPERATIONS (Last Revised 4/12/2005)

Rule 74.14 reduces ROG emissions from operations that manufacture products from or otherwise use polyester resin material. ROG emissions from this manufacturing process are controlled by limiting loss rate, monomer ROG content, application technique, or by requiring emission control equipment. Limits are also placed on the ROG content of cleaning materials.

SCAQMD Rule 1162 and SJVAPCD Rule 4684 apply to similar source categories. The limitations on monomer content and control system efficiency are the same in all three rules. Santa Barbara County APCD Rule 349 includes similar requirements but the exemption threshold is lower (50 gal/year versus 20 gal/month for the other rules). However, since Ventura County is in the South Coast distribution area, most exempt facilities likely use compliant materials. In addition, the total emissions from exempt sources are likely very low. Therefore, no additional emission reductions are available as RACM.

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RULE 74.19.1: SCREEN PRINTING OPERATIONS (Last Revised 11/11/2003)

Rule 74.19.1 reduces ROG emissions from the use of inks, coatings, adhesives, and cleaners used at screen printing operations. The rule specifies limits on the ROG content of inks, coating, adhesives and fountain solutions, whereas ROG emissions from cleaning solvents are limited by ROG content and ROG composite vapor pressure requirements.

The rule requirements for Rule 74.19.1 and Rule 1130.1 are largely equivalent. Rule 1130.1 has additional categories of materials, but these have higher limits than the general category that would apply in Rule 74.19.1. Limits on ROG content in Rule 1130.1 are stricter for extreme performance and metallic inks.

The inventory of emissions for this category is 0.0266 tons ROG per day. A very conservative estimation of incremental emission reduction from the stricter requirements of Rule 1130.1 is 0.013 tons ROG per day.

RULE 74.21: SEMICONDUCTOR MANUFACTURING (Adopted 4/6/1993)

Rule 74.21 reduces ROG emissions from semiconductor manufacturing operations through various operational requirements and solvent concentration limits. SCAQMD Rule 1164 applies to similar source categories and has some stricter requirements. The inventory of emissions for this category is 0.136 tons ROG per day in Ventura County. A very conservative estimation of incremental emission reduction from the stricter requirements of Rule 1164 is 0.068 tons ROG per day.

RULE 74.25: RESTAURANT COOKING OPERATIONS (Adopted 10/12/2004)

Rule 24.25 reduces ROG and PM emissions from conveyorized charbroilers that are used to cook 875 pounds of meat or more per week. It is similar to SCAQMD Rule 1138 and SJVAPCD Rule 4692. Rule 4692 has a few provisions that are slightly more restrictive than Rule 74.25. Rule 74.25 requires at least 83% reduction of both ROG and PM10 from applicable units, while Rule 4692 requires at least 83% reduction in PM10 and 86% reduction in ROG. In addition, SJVAPCD applies to charbroilers used to cook more than 400 pounds of meat per week.

While the additional restrictions in the SVJAPCD rule could be added to Rule 74.25, it would not be likely to help advance attainment of the ozone NAAQS in Ventura County. The rulemaking process takes approximately one year, which would allow for adoption at about 2018. It is necessary to provide time for industry to adjust to the new requirements and either demonstrate compliance or purchase new equipment that meets the requirements of a new rule. Therefore, any new reductions would not likely occur until the ozone season of 2020, which is the attainment year for Ventura County.

In addition, the incremental cost effectiveness of increasing the control efficiency from 83% to 86% would likely be astronomical. In fact, many of the catalytic oxidizers currently in use likely

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meet the 86% ROG reduction requirement in Rule 4692, so changes to Rule 74.25 would not result in emission reductions from those units.

RULE 74.28: ASPHALT ROOFING OPERATIONS (Adopted 5/10/1994)

Rule 74.28 reduces ROG emissions from asphalt roofing equipment and operations by requiring close fitting container lids and temperature limits. Rule 74.28 applies to equipment used for melting, heating or holding asphalt or coal tar pitch. District staff found no rules in other districts that apply to the same source category. Therefore, no additional emission reductions are available and this rule would not qualify as RACM.

RULE 74.29: SOIL DECONTAMINATION OPERATIONS (Last Revised 4/8/2008)

Rule 74.29 reduces ROG emissions from operations that handle soil contaminated with ROG-containing material. SCAQMD Rule 1166, SJVAPCD Rule 4684 and BAAQMD Rule 8-40 apply to similar source categories. Rule 74.29 was amended in April of 2008 specifically to update it so it would incorporate the more stringent provisions of the other districts' rules that were cost effective in Ventura County. These revisions were implemented as required by the "every feasible measure" provisions of the CCAA. Therefore, no additional emission reductions are available as RACM.

RULE 74.31: METALWORKING FLUIDS AND DIRECT CONTACT LUBRICANTS (Adopted 11/12/2013)

Rule 74.31 applies to the production, sale and use of metalworking fluids and direct contact lubricants and reduces ROG emissions by requiring substitution of high-ROG metalworking fluids with low-ROG fluids, including medium napthenic oils, paraffinic oils, vegetable oils, synthetic or semi-synthetic oils, or water-reducible fluids. SCAQMD Rule 1144 applies to similar source categories. Rule 74.31 was designed to adopt all provisions of Rule 1144 that are cost effective in Ventura County. Therefore, no additional emission reductions are available as RACM.

RULE 74.34: NOx REDUCTIONS FROM MISCELLANEOUS SOURCES (Adopted 12/13/2016)

Rule 74.34 applies to dryers, furnaces, kilns, incinerators, and ovens with a rated heat input capacity 5 million BTU per hour or greater. SJVAPCD Rule 4309 applies to similar source categories with a similar heat input threshold. SCAQMD Rule 1147 applies to similar source categories with a lower threshold of applicability at 1 million BTU per hour or greater. During the rule development process, District staff determined it was not cost effective in Ventura County to require retrofit on sources below the adopted threshold of 5 million BTU per hour. Therefore, no additional emission reductions are available under RACM.

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VACUUM TRUCK OPERATIONS (BAAQMD Rule 8-53 – No VCAPCD Equivalent Rule)

Rule 8-53 was adopted April 18, 2012 and applies to the following facilities: petroleum refineries, bulk plants, bulk terminals, marine terminals, and organic liquid pipeline facilities. Moreover, on May 2, 2008, the South Coast AQMD revised their Rule 1149, *Storage Tank and Pipeline Cleaning and Degassing*, to, among other provisions, require that until certain other provisions are met, vacuum trucks that remove residual product and sludge from pipeline and storage tanks subject to the rule must exhaust vapors into a control device and the exhaust concentration of control devices must not exceed 500 ppmv, measured as methane. Bay Area AQMD staff estimates that Rule 8-53 will reduce ROG emissions from vacuum truck operations by 1.05 ton per day. This represents an 85 percent reduction in emissions from moving regulated materials and a 70 percent reduction of overall organic emissions from vacuum truck operations.

Opportunities for significant emission reductions from vacuum trucks are more limited in Ventura County than in the Bay Area AQMD and South AQMD regions. Ventura County no longer has any refineries or marine terminals and only a few bulk plants and terminals. It does, however, have numerous oil production, storage, and processing facilities, including storage tanks, sumps, boxes, and pipelines. Moreover, vacuum trucks are often used in Ventura County to transport produced crude oil from small and isolated production locations to storage and processing facilities.

Ventura County oil annual oil production amounts to 2.8% of the refinery capacity in the Bay Area (ratio of DOGGR 2015 oil production data for Ventura County to California Energy Commission refinery capacity data). Therefore, a conservative estimate of the emission reductions from a vacuum truck control rule in Ventura County is 15% of the BAAQMD rule, or 0.16 tons ROG per day. Note that due to rule development time and implementation time, the soonest this could be in effect is 2019.

EMISSIONS OF NITROGEN OXIDES FROM COMMERCIAL FOOD OVENS (SCAQMD Rule 1153.1 – No VCAPCD Equivalent Rule)

SCAQMD Rule 1153.1 applies to in-use ovens, dryers, smokers, and dry roasters with nitrogen oxide (NOx) emissions from fuel combustion that require SCAQMD permits and are used to prepare food or products for making beverages for human consumption. Preliminary calculations based on population ratio indicate possible NOx reductions of 0.008 tons per day from commercial food ovens in Ventura County. This estimate is based on estimated reductions from SCAQMD Rule 1147 when it was originally adopted in November 2008.

SCAQMD adopted Rule 1153.1 to remove commercial food ovens from Rule 1147 applicability. Control technologies have not matured in a timely manner for commercial food ovens. In response, SCAQMD removed food ovens, including roasters and smokehouses, from Rule 1147 applicability and subjected them to new Rule 1153.1 with different emission limits and compliance dates.

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Rule 1153.1 extends the compliance time for most applicable units to three years or more after the adoption date in 2014. In order to provide similar compliance timeframes in Ventura County, the emission reductions would not be required until 2020 or later so they would not affect the attainment date. Therefore, reductions from these sources would not be considered RACM.

FOOD PRODUCTS MANUFACTURING AND PROCESSING OPERATIONS (SCAQMD Rule 1131 – No VCAPCD Equivalent Rule)

Rule 1131 was adopted September 15, 2000 and applies to food manufacturing facilities. Rule 1131 reduced ROG emissions from food manufacturing and processing operations by limiting the ROG content of process solvents and solvents used for sterilization of equipment; or requiring control equipment; or requiring equivalent reductions through reformulation or process modifications. Affected operations include distillation, extraction, reacting, blending, drying, crystallizing, granulation, separation, sterilization, and filtering.

SCAQMD staff estimated that Rule 1131 would reduce ROG emissions from food manufacturing operations by two tons per day. This represents an 81 percent reduction in emissions from subject operations.

Ventura County has a number of food processing facilities, but they do not use the kind of processes cited above that require significant solvent use. None of the food processing facilities in Ventura County have permitted equipment or processes that use solvent. Therefore, solvent use at the facilities must be below the exemption threshold of 200 pounds per year. Maximum solvent use at all food processing facilities combined is 2.7 tons of ROG per year, or 0.0074 tons ROG per day. Applying the estimated 81% reduction, a very conservative estimate of the potential emission reductions from this type of rule in Ventura County is 0.006 tons ROG per day.

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