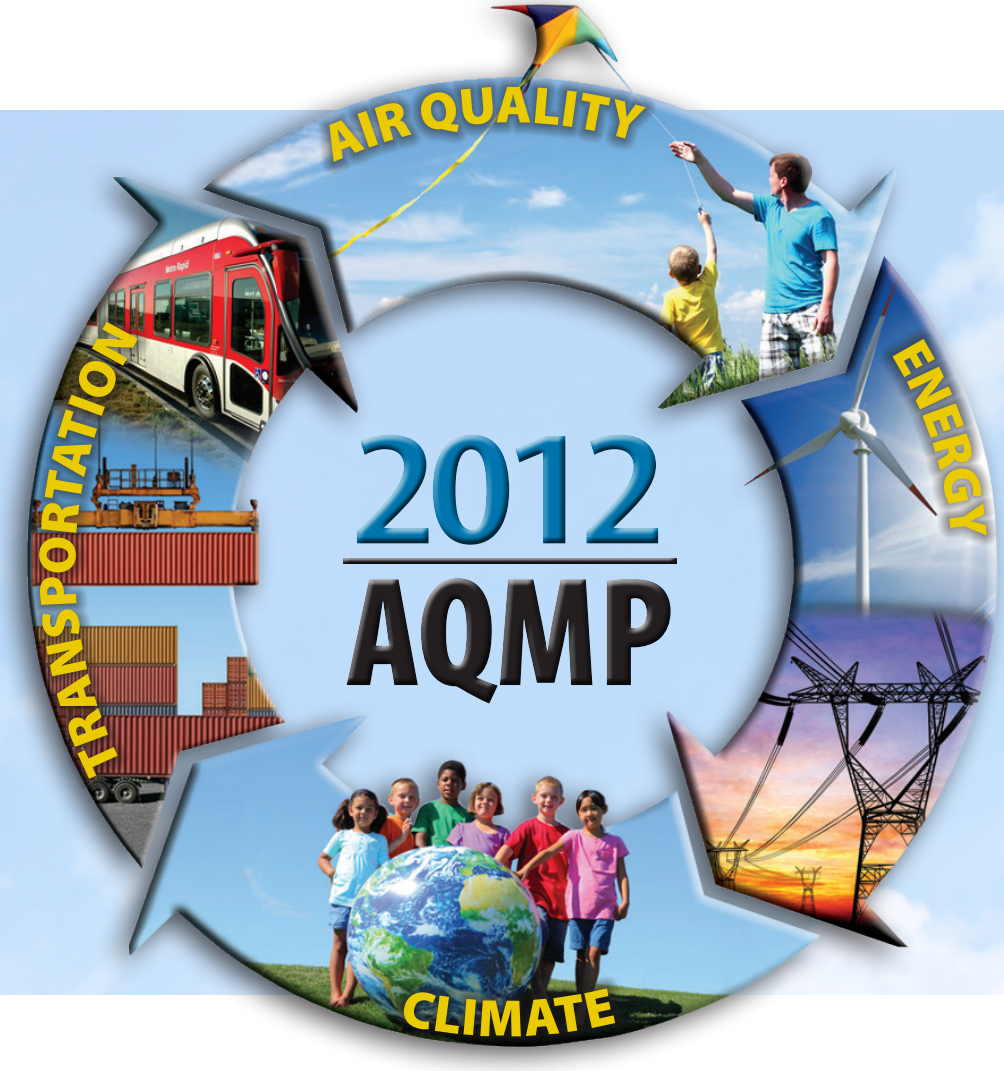
Appendix VI

Air Quality Management Plan



Reasonably Available Control Measures (RACM) Demonstration

December 2012

South Coast Air Quality Management District
Cleaning the air that we breathe...
AQMD

FINAL 2012 AQMP
APPENDIX VI

REASONABLY AVAILABLE CONTROL MEASURES (RACM) DEMONSTRATION

DECEMBER 2012

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INTRODUCTION

The South Coast Air Basin (Basin) is classified as "Nonattainment" with respect to the 1997 PM2.5 National Ambient Air Quality Standards (NAAQS) of 15 µg/m^3 annual average, and 65 µg/m^3 24-hour average, and the U.S. EPA has granted the Basin a one-time extension to April 5, 2015 to reach attainment.[1] In 2006, the U.S. EPA lowered the 24-hour PM2.5 standard to 35 µg/m^3, and designated the Basin and 30 other areas as nonattainment, effective December 14, 2009. The Basin is required to submit an Air Quality Management Plan (AQMP) to U.S. EPA no later than 3 years after designation date, by December 14, 2012, to address the attainment strategies for the 2006 24-hour PM2.5 standard. In addition, the Basin must reach attainment within 5 years of the designation date, or by December 14, 2014. Table VI-1 provides a list of several nonattainment areas in the nation and the important milestone dates that require actions from the nonattainment air districts.

TABLE VI-1

PM2.5 NAAQS Designation and Implementation

	1997 PM2.5 NAAQS	**2006 PM2.5 NAAQS**
Nonattainment Areas	— Los Angeles, South Coast Air Basin, CA — San Joaquin Valley, CA — New York, New Jersey, Long Island, CT	— Los Angeles, South Coast Air Basin, CA — San Joaquin Valley, CA — Sacramento Metro, CA — San Francisco, CA — New York, New Jersey, Long Island, CT
Effective Date of Standards	September 1997	December 2006
Effective Date of Designations	April 2005	December 2009
SIPs Due Within 3 Years	April 2008	December 2012
Attainment Date Within 5 Years	April 2010	December 2014
Attainment Date With Extension	Up To April 2015	Up To December 2019

Particulate Matter ($PM_{2.5}$) Nonattainment Areas, www.epa.gov/airquality/greenbook/rnc.html, posted on 3/30/2012.

With regards to the ozone standards, on March 12, 2008, the U.S. EPA strengthened its ground-level 8-hour ozone standard from 0.08 parts per million (ppm) to a level of 0.075 ppm. On May 21, 2012, the U.S. EPA classified two areas in the country, the South Coast and the San Joaquin Valley, as "Extreme" nonattainment areas with respect

to the 2008 8-hour ozone standard.[2] The attainment dates for the 1997 and 2008 ozone standards are June 15, 2024 and December 31, 2032, respectively. Table VI-2 shows the classifications and attainment dates for several nonattainment areas in the nation. While an extreme nonattainment area has a period of 20 years from the date of designation to reach attainment, other areas that are classified as severe, serious, moderate and marginal must reach attainment sooner in 15 years, 9 years, 6 years and 3 years after the date of designation, respectively. [3]

TABLE VI- 2

8-Hour Ozone NAAQS Designation and Implementation

NONATTAINMENT AREA	1997 OZONE STANDARD		2008 OZONE STANDARD	
	Classification	Attainment	Classification	Attainment
Los Angeles South Coast Air Basin, CA	Extreme	June 2024	Extreme	December 2032
San Joaquin Valley, CA	Extreme	June 2024	Extreme	December 2032
Riverside County (Coachella Valley), CA	Severe-15	June 2019	Severe-15	December 2027
Sacramento Metro, CA	Severe-15	June 2019	Severe-15	December 2027
Houston-Galveston-Brazoria (HGB), TX	Severe-15	June 2019	Marginal	December 2015
Ventura County, CA	Serious	June 2013	Serious	December 2021
Dallas-Fort Worth , TX	Serious	June 2013	Moderate	December 2018
New York, New Jersey, Long Island, CT	Moderate	June 2010	Marginal	December 2015
Washington (DC-MD-VA Area), District Columbia	Moderate	June 2010	Marginal	December 2015
San Francisco, CA	Marginal	June 2007	Marginal	December 2015

Note: Classifications of 8-Hour Ozone Nonattainment Areas, www.epa.gov/airquality/greenbook/gnc.html, posted on 3/30/2012. The designation date is December 31, 2012. Attainment dates are within 20 years after the date of designation for extreme area, 15 years after the date of designation for severe area, 9 years after the date of designation for serious area, 6 years after the date of designation for moderate area, and 3 years after the date of designation for marginal area.

To address multiple layers of attainment deadlines, the District is working in collaboration with CARB and the San Joaquin Valley to develop a joint "Vision of Clean Air" and formulate the attainment strategies for 24-hour PM2.5 standards in 2014-2019, 8-hour ozone standards in 2024-2032, and the state is committed to reduce greenhouse gases emissions by 2050. The District's goal is to develop and incorporate

all feasible control measures while balancing costs and socioeconomic impacts to meet the requirements of the Clean Air Act (CAA) on a timely basis.

The CAA, Section 172(c)(1), sets the overall framework for the Reasonably Available Control Measures (RACM) analysis. The CAA requires the nonattainment air districts to:

> *"provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology)and shall provide for attainment of the national primary ambient air quality standards."*

The U.S. EPA provided further guidance on the RACM in the preamble and the final "Clean Air Fine Particle Implementation Rule" to implement the 1997 PM2.5 NAAQS which were published in the Federal Register in November 1, 2005 and April 25, 2007, respectively. [4, 5] The U.S. EPA's long-standing interpretation of the RACM provision stated in the 1997 PM2.5 Implementation Rule is that the nonattainment air districts should consider all candidate measures that are available and technologically and economically feasible to implement within the nonattainment areas, including any measures that have been suggested; however, the districts are not obligated to adopt all measures, but should demonstrate that there are no additional reasonable measures available that would advance the attainment date by at least one year or contribute to reasonable further progress (RFP) for the area.

Regarding the approach of identifying emission reduction programs, the U.S. EPA recommends the nonattainment air districts to first identify the emission reduction programs that have already been implemented at the federal, other states and local air districts. Next, the U.S. EPA recommends the air districts to examine additional RACM/RACTs adopted for other nonattainment areas to attain the ambient air quality standards as expeditiously as practicable. The U.S. EPA also recommends the air districts evaluate potential measures for sources of direct PM2.5, SOx and NOx first with a presumption that VOC and ammonia do not significantly contribute to the PM2.5 concentration in the nonattainment area. The PM2.5 Implementation Rule also requires the air districts establish RACM/RACT emission standards taking into consideration the condensable fraction of direct PM2.5 emissions after January 1, 2011. In addition, the U.S. EPA recognizes that each nonattainment area has its own profile of emitting sources, and thus neither requires specific RACM/RACT to be implemented in every nonattainment area, nor includes a specific source size threshold for the RACM/RACT

analysis. The U.S. EPA however recommends severe nonattainment air districts to evaluate controls for smaller sources if needed for attainment.

A RACM/RACT demonstration must be provided within the State Implementation Plan (SIP). For areas projected to attain within five years of designation, a limited RACM/RACT analysis including the review of available reasonable measures, the estimation of potential emission reductions, and the evaluation of the time needed to implement these measures is sufficient. The areas that cannot reach attainment within five years must conduct a thorough RACM/RACT analysis to demonstrate that sufficient control measures could not be adopted and implemented cumulatively in a practical manner in order to reach attainment at least one year earlier.

In regards to economically feasible, the U.S. EPA did not propose a fixed dollar per ton cost threshold and recommended the air districts to include health benefits in the cost analysis. As indicated in the preamble of the 1997 PM2.5 Implementation Rule:

> "*In regard to economic feasibility, U.S. EPA is not proposing a fixed dollar per ton cost threshold for RACM, just as it is not doing so for RACT…Where the severity of the nonattainment problem makes reductions more imperative or where essential reductions are more difficult to achieve, the acceptable cost of achieving those reductions could increase. In addition, we believe that in determining what are economically feasible emission reduction levels, the States should also consider the collective health benefits that can be realized in the area due to projected improvements."*

Subsequently, on March 2, 2012, the U.S. EPA issued a memorandum to confirm that the overall framework and policy approach stated in the PM2.5 Implementation Rule for the 1997 PM2.5 standards continue to be relevant and appropriate for addressing the 2006 24-hour PM2.5 standards. [6]

The objective of this Appendix is to demonstrate that the District has conducted a thorough RACM/RACT analysis to meet the requirement of the CAA following closely the policy and guidance approach provided by the U.S. EPA in its PM2.5 Implementation Rule in identifying and selecting the control measures for the Final 2012 AQMP.

For the scope of this RACM analysis, District staff will closely study the attainment strategies for stationary and area sources, the rules and regulations of the air districts responsible for the nonattainment areas listed in Table VI-1 and Table VI-2 while taking into account all available candidate measures proposed by the U.S. EPA, CARB,

the Advisory Committee members, the technical experts in air pollution control as well as the public and variety of stakeholders. Staff selected the air districts listed on Table VI-1 and Table VI-2 based on the severity of their nonattainment status and their near-term attainment dates. The RACM analysis for Transportation Control Measures is conducted by SCAG as shown in Appendix IV-C and the RACM analysis for mobile sources conducted by the CARB is shown in the Attachment of this Appendix.

IDENTIFYING AND EVALUATING REASONABLY AVAILABLE CONTROL MEASURES

To demonstrate that the District has considered all candidate measures that are available and technologically and economically feasible to implement within the Basin, the District staff has conducted 6-steps analysis described below.

Step 1 - Air Quality Technology Symposium

District staff conducted the 2012 Air Quality Technology Symposium in September 2011with participation of technical experts from a variety of areas and the public to solicit new and innovative concepts to assist the Basin in attaining the NAAQS) for PM2.5 by 2014-2019 and ozone by 2024-2032. In addition, the District's Planning, Rules Development and Area Sources Division conducted multiple internal meetings with the District's Technology Advancement Office and the Engineering & Compliance Division from September through November of 2011 to brainstorm ideas for feasible control measures. In addition, the District also conducted an on-going extensive outreach to engage a wide range of stakeholders in the process. In general, the following concepts were proposed:

- Promoting zero or near-zero emission measures and providing incentives for on-road and non-road mobile sources as well as goods movement;

- Further reducing VOC emissions from marine coatings, aerospace coatings, solvents and various consumer products, and focusing on reformulations or alternatives to VOC based-solvents;

- Conducting a mandatory technology review for NO_x RECLAIM, and further reducing NOx emissions through the use of low NO_x burners, fuel cells, biogas control, distributed power generation applications, and assessment for all feasible measures, as well as incentives;

- Addressing energy-climate change and co-benefits, the need for electricity storage and smart grid, or new fossil-fueled peaking plants, to compensate for fluctuations in renewable energy supply, and the use of outreach to promote energy efficiency measures; and

- Influencing consumer behavior, expanding carpool programs, incentivizing with outreach, increasing gas tax, and promoting public-private participation and multi-agency collaboration.

Step 2 – U.S. EPA's Suggested List of Control Measures

District staff reviewed for inclusion the control measure concepts suggested by the U.S. EPA for PM2.5 nonattainment areas described in the preamble of the PM2.5 Implementation Rule. As summarized in Table VI-3, the District either has an existing rule or developed a 2012 control measure for each control measure concept suggested by the U.S. EPA.

TABLE VI-3

Demonstration of Compliance with Control Measures Recommended by U.S. EPA

U.S. EPA'S CONTROL MEASURE CONCEPTS	2012 CONTROL MEASURES AND EXISTING RULES
STATIONARY SOURCE MEASURES	
Diesel engine retrofit, rebuild, replacement, with catalyzed particle filter	Rule 1470, Rule 1110.2
New or upgraded emission controls for direct PM2.5 (e.g., baghouse or electrostatic precipitator; improved monitoring methods)	Rule 1155, Rule 1156
New/upgraded emission controls for PM2.5 precursors (e.g., scrubbers)	2010 RECLAIM Amendment
Energy efficiency measures to reduce fuel consumption	Rule 1146, Rule 1146.1, Rule 1146.2, Rule 1114, Rule 1111, Control Measure EDU-01, INC-01
MOBILE SOURCE MEASURES	
On-road diesel engine retrofits for school buses and trucks using U.S. EPA-verified technologies	Refer to CARB's Existing Rules and Control Measures
Non-road diesel engine retrofit, rebuild/replace with catalyzed particle filter	Refer to CARB's Existing Rules and Control Measures

TABLE VI-3 (concluded)

Demonstration of Compliance with Control Measures Recommended by U.S. EPA

U.S. EPA'S CONTROL MEASURE CONCEPTS	2012 CONTROL MEASURES AND EXISTING RULES
MOBILE SOURCE MEASURES (continued)	
Diesel idling programs for trucks, locomotive, and other mobile sources	Refer to CARB's Existing Rules and Control Measures
Transportation control measures (including those listed in section 108(f) of the CAA as well as other TCMs), as well as other transportation demand management and transportation systems management strategies	Refer to SCAG's Control Measures
Programs to reduce emissions and accelerate retirement of high emitting vehicles, boats, lawn and garden equipment	Refer to CARB's Rules and Control Measures
Emissions testing and repair/maintenance programs for on-road vehicles	Refer to CARB's Rules and Control Measures
Emissions testing and repair/maintenance programs for non-road heavy duty vehicles and equipment	Refer to CARB's Rules and Control Measures
Programs to expand use of clean burning fuels	Refer to CARB's Rules and Control Measures
Opacity/emissions standards for gross-emitting diesel equipment or vessels	Refer to CARB's Rules and Control Measures
AREA SOURCE MEASURES	
New open burning regulations and/or measures to minimize emissions from forest and agricultural burning activities	Rule 444
Reduce emissions from woodstoves and fireplaces	Rule 445, Control Measure BCM-01
Regulate charbroiling/other commercial cooking operations	Control Measure BCM-02
Reduce solvent usage or solvent substitution	Control Measure CTS-02
Reduce dust from construction activities/vacant disturbed areas, paved and unpaved roads.	Rule 1157

Step 3 – Reasonably Available Control Technology (RACT)

As required by the CAA, Section 172(c)(1), the nonattainment areas must implement applicable RACTs. While RACM refers to measures which may be applicable to a wide range of sources, stationary as well as area and mobile sources, the U.S. EPA defines RACT as the lowest level of control specifically designed for stationary sources:

"*lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility*".

The CAA, Section 172(c)(1) and Section 182, require nonattainment areas for ozone that are designated at moderate or above to adopt RACT for major sources. Nonattainment areas classified as serious, severe, or extreme must adopt control measures above and beyond the minimum RACT levels to fulfill attainment.

In addition, the CAA, Section 183, requires the U.S. EPA to provide guidance to the air districts on the "presumptive" RACT levels. As a result, the U.S. EPA developed several Control Techniques Guidelines (CTGs) for VOC sources, and Alternatives Control Techniques (ACT) documents for VOC and NOx sources. Most of the CTGs were issued prior to 1990, and most of the ACT documents were issued in the mid-1990s. The CTGs contain mandated emission standards and work practices whereas the ACTs describe available control techniques and their cost effectiveness, but do not define "presumptive" RACT levels. The U.S. EPA is required to update existing CTG/ACTs, or develop new guidelines, on a frequent basis as new or updated control technologies become available.

The CAA, Section 182(b)(2), further requires the air districts to revise their SIPs to include the mandated RACT levels covered by the CTGs issued after November 15, 1990 and prior to the area's date of attainment. The U.S. EPA's final rule to implement the 8-hour ozone standard discusses RACT requirements which states that where a RACT SIP is required, the states must assure that RACT is met, either through a certification that previously required RACT controls represent RACT for 8-hour ozone standards, or through a new RACT determination.[7] To satisfy this requirement, the District developed and submitted to CARB and U.S. EPA a demonstration and certification that the District's rules and regulations fulfill the 8-hour ozone RACT requirements developed between 1990 and the beginning of 2006.[8] The U.S. EPA approved the District's RACT demonstration in December 2008.[9]

Subsequently, the U.S. EPA developed twelve new CTGs in 2006-2008 to update the requirements for several types of coatings, and staff again conducted an analysis comparing the current requirements in the District's rules with those requirements in the new CTGs. The 12 new CTGs developed by the U.S. EPA are: [10]

- Flat Wood Paneling Coatings (2006)

- Flexible Packaging Printing Materials (2006)
- Industrial Cleaning Solvents (2006)
- Lithographic Materials and Letterpress Printing Materials (2006)
- Large Appliance Coatings (2007)
- Metal Furniture Coatings (2007)
- Paper, Film, and Foil Coatings (2007)
- Miscellaneous Metal Products Coatings (2008)
- Plastic Parts Coating (2008)
- Auto and Light-Duty Truck Assembly Coatings (2008)
- Fiberglass Boat Manufacturing Materials, and Miscellaneous (2008)
- Industrial Adhesives (2008)

District staff's analysis is summarized in Table VI-4. As shown in Table VI-4, three District's VOC rules, Rule 1130 – Graphic Arts, Rule 1115 – Motor Vehicle Assembly Line Coating Operations and Rule 1168 - Adhesives and Sealants have met or exceeded most, but not all, minimum requirements of the CTGs. Consequently, District staff has developed one or more control measures to address these issues. Staff estimates a potential reduction of 0.2 tons per day VOC associated with Rule 1130, and less than 0.01 tons per day VOC associated with Rule 1115, and no emission reduction estimate for Rule 1168 is available at this time. District staff is aware that additional assessments may be required, such as a determination that major VOC sources subject to Rules 1130, 1115, and 1168 met the minimum requirements in the CTGs, or a negative declaration that there are no sources in the area subject to the CTGs. These additional analyses will be provided during the rule development phase, or at the time of developing the 8-hour ozone AQMPs, whichever comes first.

TABLE VI-4
Evaluation of 2006-2008 U.S. EPA's VOC CTGs

CTG TITLE	DISTRICT RULE	EVALUATION
Flat Wood Paneling Coatings (2006)	Rule 1104 - Wood Flat Stock Coating Operations	Overall equivalency to CTG emission standards. No further action is needed. [1]
Flexible Packaging Printing Materials (2006); Lithographic Printing Materials and Letterpress Printing Materials (2006)	Rule 1130 - Graphic Arts	Regarding flexible packaging printing, the rule is more stringent than CTG, and thus no further action is needed. Regarding lithographic and letterpress printing, the CTG standards for alcohol content in fountain solution and overall control efficiency are more stringent. Staff estimated a potential reduction of 0.2 tpd and may pursue rule update as part of Control Measure MCS-01 – Application of All Feasible Measure Assessment if needed for ozone attainment. [1]
Industrial Cleaning Solvents (2006)	Rule 1171 - Solvent Cleaning Operations	District rule is more stringent than CTG. No further action is needed. [2]
Large Appliance Coatings (2007); Metal Furniture Coatings (2007); and Miscellaneous Metal Products Coatings (2008)	Rule 1107 - Coating of Metal Parts and Products	District rule is equivalent or more stringent than CTGs, thus no further action is needed. [2]
Paper, Film, and Foil Coatings (2007)	Rule 1128 - Paper, Fabric, and Film Coatings	District rule is more stringent than CTG. No further action is needed.[1]
Plastic Parts Coatings (2008)	Rule 1145 - Plastic, Rubber, Glass Coatings	District rule is equivalent or more stringent than CTG. No further action is needed. [1]
Auto and Light-Duty Truck Assembly Coatings (2008)	Rule 1115 - Motor Vehicle Assembly Line Coating Operations	CTG has more stringent limits for electro-deposition primer at 84 g/L (145 g/L in Rule 1115); sprayable primer, primer-surfacer, and topcoat at 144 g/L (180 g/L in Rule 1115); and trunk coatings, interior coatings, sealers, and deadeners at 650 g/L (Rule 1115 provides an exemption for these categories). However, Rule 1115 has a small inventory of about 0.01 tpd, thus no action is needed. [1]
Fiberglass Boat Manufacturing Materials, and Miscellaneous (2008)	Rule 1162 - Polyester Resin Operations	The rule has an overall equivalency to CTG based on more stringent transfer efficiency requirements. No further action is needed. [2]
Industrial Adhesives (2008)	Rule 1168 - Adhesives and Sealants	CTG has more stringent limits for reinforced plastic composite at 200 g/L (250 g/L in Rule 1168); single-ply roof membrane adhesive primer at 250 g/L (450 g/L in Rule 1168); other adhesive primers at 250 g/L (420 g/L in Rule 1168); the control efficiency is 85% (80% in Rule 1168); and the work practices is limited only for stripping cured adhesives or sealants for Rule 1148. Staff may further pursue rule update as part of Control Measure MCS-01 – Application of All Feasible Measures Assessment or CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants if needed for ozone attainment. [3]

Note: 1) Evaluation conducted by Hopps and Ono; 2) Evaluation conducted by Morris and Ono; 3) Evaluation conducted by Calungcagin and De Boer.

Step 4 - Other Districts' Current Rules and Regulations

Because the District is classified as extreme nonattainment for both the 1997 and 2008 ozone standards, and nonattainment for both the 1997 and 2006 PM2.5 standards, the District staff commits to search for innovative control technologies, make improvements, and update the District's rules and regulations as expeditiously as possible to effectively help the Basin reach the PM2.5 attainment in 2014-2019, and ozone attainment in 2024-2032. District staff's envisioned that the control technologies available and cost-effective to be implemented in other local areas in California, or any other areas in the nation, would be available and cost-effective for use in the Basin in a timely manner.

To catch all the improvements on innovative control technologies and identify the areas for improvements in its rules and regulations, the District staff re-evaluated all the District's source-specific rules and regulations, and compared the requirements in these rules with more than 100 rules recently adopted or amended by four local air districts in California from 2007 to 2012. The four air districts selected are San Joaquin Valley, Sacramento Metropolitan, Ventura, and San Francisco Bay Area. Staff selected these districts based on the severity of their nonattainment status and their near-term attainment dates as shown in Table VI-1 and Table VI-2.

The summary of this analysis is presented in Table VI-5. In this table, staff ***only*** listed the areas where the requirements in other local air district's rules are more stringent than those in the District's rules and regulations. The analysis in Table VI-5 shows that in general the District's current rules and regulations are equivalent to or more stringent than those developed by other air districts. However, where improvements are possible, District staff has developed several control measures to further study the situations.

Details of the control measures, emission reductions, cost effectiveness, prioritization and implementation schedule are discussed in Chapter 4 and Appendix IV. The modeling results discussed in Chapter 5 has shown that the attainment for PM2.5 can be achieved with a few episodic additional control measures. With regards to the ozone attainment, the District has identified several control measures with estimated early emission reductions. The control measures of which emission reductions cannot be quantified will not be considered RACMs since they cannot be used collectively to estimate the advancement of the attainment date.

Staff commits to fine-tune the emission inventory, emission reduction, and cost-effectiveness analysis, especially during the rule development process. In addition, staff commits to monitor the rule development in other air districts and conduct further analysis if necessary, and has developed a catch-all Control Measure MCS-01 – Application of All Feasible Measures Assessment to facilitate this activity.

Step 5 - Other Districts' Control Measures

In an effort to ensure that all feasible candidate control measures are considered, District staff evaluated more than 100 control measures adopted within the period of 2007-2012 by eight nonattainment air districts in the nation for both PM2.5 and 8-hour ozone listed on Table VI-1 and Table VI-2, specifically Ventura, San Francisco Bay Area, San Joaquin Valley, Sacramento Metro in California, Dallas-Fort Worth and Houston-Galveston-Brazoria in Texas, New York and New Jersey. A summary of this evaluation is provided below.

Ventura

Ventura is classified as serious nonattainment for the 2008 8-hour ozone standard. In the 2006-2008 Final Triennial Assessment and Plan Update,[11] the Ventura County Air Pollution Control District conducted an analysis of all feasible control measures, and identified 7 new control measures in addition to the 15 control measures in the Ventura's 2007 AQMP. In this list, there is only one new Ventura's control measure described below that is more stringent than the requirements in the existing District's rules:

Ventura adopted a control measure to eliminate the current vapor pressure limit (45 mmHg) of low VOC spray gun cleaning and establish a new limit of 25 g/L VOC content for cleaning solutions used in aerospace assembly and component manufacturing operations, adhesives and sealants, marine coating operations, and pleasure craft coatings and commercial boatyard operations. Currently, the cleaning solutions used in marine coating operations, pleasure craft coatings, and adhesives and sealants in the Basin are subject to District's Rule 1171 limit of 25 g/L, and there is no vapor pressure limit in Rule 1171. However, the limit for cleaning solutions and strippers in District's Rule 1124 – Aerospace Assembly and Component Manufacturing Operations are currently at 200 g/L (or 45 mmHg) and 300 g/L (or 9.5 mmHg), respectively, and there is a potential to reduce these limits. Further assessment will be

conducted through the District's Control Measure CTS-02 – Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants.

San Francisco Bay Area

San Francisco Bay Area is a nonattainment area for PM2.5 standard and a marginal nonattainment for 8-hour ozone standards. On September 15, 2010, the Bay Area adopted the final Bay Area 2010 Clean Air Plan (CAP) [12] to provide an integrated, multi-pollutant strategy to address ozone, PM, air toxics and greenhouse gases. The plan established 55 feasible control measures to be implemented in the 2010-2012 timeframe in which there are 18 measures for stationary and area sources and 4 energy and climate measures. The following 6 Bay Area's control measures are currently above and beyond the requirements in the existing District's rules:

- Bay Area's Control Measure SSM1 – Metal Melting, and Control Measure SSM6 – PM Limitation proposed to reduce particulate emission limits and encourage the use of high efficiency filtration at foundry operations and metal melting facilities, and other facilities whenever appropriate. The Bay area has developed and proposed amended rule for SSM1 and scheduled for a Public Hearing in 2012. District staff will conduct further analysis study on this concept through the District's Control Measure MCS-01 – Application of All Feasible Measures Assessment.

- Bay Area's Control Measure SSM2 – Digital Printing proposed to control VOC emissions from digital printing. The Bay Area is currently collected emissions information from this fairly new category of printing, including solvent-based inkjet printing and laser printing. It is forecasted to have 21% market share by 2025, and thus there will be a potential to reduce VOC emissions from this category. District staff will conduct further study on this concept through the District's Control Measure MCS-01 – Application of All Feasible Measures Assessment.

- Bay Area's Control Measure SSM5 – Vacuum Trucks requires carbon or other control technology on vacuum trucks to reduce emissions of VOCs. District staff will conduct further study on this concept through the District's Control Measure FUG-01 – Further VOC Reductions from Vacuum Trucks.

- Bay Area's Control Measure SSM9 – Cement Kilns, SSM10 – Refinery Boilers and Heaters, SSM11 - Glass Furnaces proposed to further reduce NOx from these source

category. District staff will conduct further study through the Control Measure CMB-01 – Further NOx Reductions from RECLAIM.

- Bay Area's Control Measure ECM1 – Energy Efficiency proposed 1) to promote education and training to increase awareness on energy efficiency; 2) to provide technical assistance to local governments and encourage them to adopt and enforce energy efficient building codes; and 3) to provide incentives for improving energy efficiency at schools. These concepts are similar to those described in the District's Control Measure EDU-01 – Further Criteria Pollutant Reductions from Education, Outreach and Incentives.

- Bay Area's Control Measure ECM2 - Renewable Energy proposed to promote distributed renewable energy generation (solar, micro wind turbines, cogeneration, etc.) on commercial and residential buildings, and at industrial facilities. These concepts are covered under the District's Control Measure EDU-01 – Further Criteria Pollutant Reductions from Education, Outreach and Incentives.

The District already spearheaded in implementing other concepts in the Bay Area's AQMP that called for reducing SO_2 emissions from coke calciner and cement kilns; further controlling VOC emissions from livestock waste and natural gas production facilities; and NOx emissions from residential fan type furnaces, space heating, dryers, and ovens. The District also has an on-going program that promotes tree planting. Other Bay Area's control measures addressing New Source Review, Air Toxics "Hot Spots" program, and greenhouse gases in permitting, are either administrative in nature or not related to criteria pollutants.

San Joaquin Valley

San Joaquin Valley is extreme nonattainment with respect to 2008 8-hour ozone standards and nonattainment with respect to PM2.5 standards. Up to date, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) has developed two separate plans to address the 8-hour ozone standards in 2007 and the 1997 PM2.5 standards in 2008. Recently, the SJVUAPCD developed a 2010 mid-course review for the ozone plan, and continued the feasibility study for several other measures such as refinery wastewater separators, refinery turnaround units, refinery vacuum devices and municipal water treatment plans. In addition, the SJVUAPCD is in the process of developing a plan to address the 2006 PM2.5 standards in cooperation with CARB and the District. District staff reviewed the list of control measures completed and listed in

the San Joaquin Valley's 2010 mid-course review in comparison with the 2012 control measures recommended by the District. Overall, the District has either already implemented or developed control measures with similar concepts proposed in the SJVUAPCD plans. [13-15]

Dallas-Fort Worth (DFW) Texas

The entire state of Texas is in attainment of the PM2.5 standards, but the state has two nonattainment areas with respect to the 8-hour ozone standards: the Dallas-Fort Worth and the Houston-Galveston-Brazoria. The DFW area was reclassified from a moderate to a serious nonattainment area for the 1997 8-hour ozone standard, and is moderate nonattainment with respect to the 2008 8-hour ozone. The area must attain the 1997 and 2008 8-hour ozone standards by June 2013 and December 2018, respectively. In their previous SIPs, the Texas Commission on Environmental Quality (TCQE) identified 8 new RACMs for area sources and point sources, and 6 of these measures were already implemented at the District. The remaining 2 measures, one for the cement kilns and one for the voluntary energy efficiency and renewable energy will be implemented through the District's Control Measure CMB-01 – Further NOx Reductions from RECLAIM and Control Measure EDU-01 – Further Criteria Pollutant Reductions from Education, Outreach and Incentives.[16]

After being reclassified from a moderate to a serious nonattainment area, TCQE conducted additional RACM analysis in 2011 and made a determination not to adopt any additional measures since modeling demonstrated that the area would be able to meet the attainment date of 2013 for the 1997 ozone standard.

Houston-Galveston-Brazoria (HGB) Texas

The Houston-Galveston-Brazoria area was reclassified from moderate to a severe nonattainment area for the 1997 8-hour ozone standard, and classified as marginal for the 2008 8-hour ozone standard. The HGB area must attain the 1997 8-hour ozone standards by June 2019. The TCQE identified 11 RACMs for area sources and point sources. After being reclassified to severe nonattainment area, the TCQE conducted additional RACM analysis, analyzed additional 100 potential control measures, and determined that there is only one control measure that would help advance the attainment date for the HGB by one year. [17]

This specific control measure calls for a 25% additional reduction of the facility's highly reactive VOC (HRVOC) caps from the facilities which are located in the Harris County and regulated under the HRVOC Emissions Cap and Trade program. The HRVOC cap includes the emissions from cooling towers, process vents, and flares. The District does not have a VOC cap and trade program, nevertheless plans to further control emissions from flares and from process vents at specific facilities through the District's Control Measure CMB-02 – NOx Reductions from Biogas Flares, FUG-01 – Further VOC Reductions from Vacuum Trucks, FUG-02 – Emission Reduction from LPG Transfer and Dispensing , and FUG-03 – Further VOC Reductions from Fugitive VOC Emissions. The District has no plan to further regulate the emissions from cooling towers at this stage.

New York Metropolitan

The New York Metropolitan Area is classified as nonattainment area or the 1997 annual PM2.5 standard of 15 µg/m3. All of the New York State is in compliance with the 1997 24-hour PM2.5 standard of 65 µg/m3. To satisfy the requirement of the CAA, the New York Department of Environmental Conservation (NYDEC) finalized the final annual PM2.5 SIP in July 2008. [18] In this final PM2.5 SIP, it was determined that modeling will be used to demonstrate attainment in 2010 taking into effect the emission reduction programs already in place, the control measures already proposed, and the contingency measures, if needed. The three stationary source control measures that are more stringent than the District's existing rules are: [19]

- Portland Cement Plants. The NYDEC has revised its regulations for cement plants on June 11, 2010 to require case-by-case RACT analysis for cement kilns. The District selects to reduce cement kiln emissions through the District's Control Measure CMB-01 – Further Reductions from NOx RECLAIM.

- Glass Furnaces. The NYDEC has revised its regulation for glass manufacturing facilities on June 11, 2010 to require case-by-case RACT analysis to potentially include control technologies such as oxy-fuel firing, low NOx burners, SCR, SNCR. The District selects to reduce emissions from glass furnaces through Control Measure CMB-01 – Further Reductions from NOx RECLAIM.

- Stationary Combustion Installations. The NYDEC has revised its regulation on June 8, 2010 to include stricter, case-by-case RACT determination for major stationary sources that contain natural gas and/or oil-fired Industrial/Commercial/Institutional

boilers, or combined cycle/cogeneration combustion turbines. The Districts will reduce emissions from this category of sources through the District's Control Measure CMB-01 – Further Reductions from NOx RECLAIM.

In addition, many counties in the New York state are nonattainment areas with respect to the 8-hour ozone standards. The NYDEC developed a comprehensive plan to address multi-pollutant attainment for criteria pollutants, greenhouse gases and toxics in June 2010.[20] In addition to the control measures for cement kilns, glass furnaces, boilers and turbines addressed above, the NYDEC includes several measures for VOC Clean Air Interstate Trading of NOx and SO_2. Some of the VOC measures are more stringent than the District's existing rules which will be further analyzed under District's Control Measure MCS-01 – Application of All Feasible Measures Assessment.

New Jersey and Sacramento Metro

District staff also reviewed the control measures developed by Sacramento Metro and New Jersey Department of Environmental Protection for their 8-hour ozone plans. There are no additional new measure concepts that the District has not yet considered for this Final 2012 AQMP. [21-24]

Step 6 - Additional Studies and Analyses

In addition to all of the above analyses, SCAG, CARB, and the District have completed the following analyses to meet the requirements of the CAA:

- RACM analyses and demonstration conducted by SCAG and CARB for transportation and mobile sources control measures are included in Appendix IV-C and in the Attachment of this Appendix.[25]

- Costs and cost effectiveness analyses, planning and scheduling to implement for each District's stationary source and mobile source control measures, if available, are provided in Chapter IV, Appendix IV-A and B.

CONCLUSION

Following are the District staff's findings:

- As required by the CAA and the U.S. EPA's PM2.5 Implementation Rule, District staff evaluated and analyzed all feasible control measure concepts that were currently available for inclusion in the Final 2012 AQMP. These concepts were either provided by the public and experts, or recommended by U.S. EPA, or implemented by other air districts. From these concepts, District staff selected and developed 8 short-term stationary source control measures to address the 24-hour PM2.5 attainment, 16 early-action stationary source control measures and 17 on-road and off-road control measures to address the 8-hour ozone attainment. District staff also developed a catch-all Control Measure MSC-01 – Application of All Feasible Measures Assessment to facilitate the inclusion of any incoming innovative air pollution control technologies or ideas that can help the Basin achieve the NAAQS as expeditiously as possible.

- Following the approach recommended by the U.S. EPA in the PM2.5 Implementation Rule, District staff conducted a study of more than 100 rules and regulations and 100 control measures recently developed in the 2007-2012 timeframe by other nonattainment air districts in the nation. In general, the District's existing rules and regulations are equivalent to, or more stringent than other districts' rules and regulations and their proposed control measures in their respective SIPs. In the few areas where the District's rules can be amended to promote cleaner technologies, add additional best management practices, and improve enforceability, District staff has developed one or more control measures to facilitate these activities.

- The control measures that do not have estimated emission reductions cannot be considered RACMs, and the District commits to further conduct analyses to refine the emission inventory, emission reductions, and cost-effectiveness for these measures. The District's ambient air quality data and modeling analysis in Chapter 3 and Chapter 5 demonstrates that the Basin would be able to meet the 24-hour PM2.5 attainment date by 2014 with the implementation of a few episodic control measures discussed in Chapter 4.

- With regards to the early actions to achieve ozone attainment, District staff has developed an effective menu of controls to meet the attainment dates as expeditiously as possible. The available control measures that District staff did not include would

not collectively advance the attainment date or contribute to the RFP because of the uncertain non-quantifiable amount of emission reductions that they may potentially generate.

- In conclusion, the District has conducted the RACM/RACT analysis for identifying and selecting the control measures for the Final 2012 AQMP is in compliance with the requirements of the CAA, the U.S. EPA's PM2.5 Implementation Rule, as well as the U.S. EPA's policy and guidelines.

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TABLE VI-5

Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1109	NOx	Emissions of Oxides of Nitrogen from Boilers and Process Heaters – Petroleum Refineries (Amended 8/5/88)	0.03 lbs/mmBTU of heat input (~25 ppmv). Subsumed by RECLAIM. RECLAIM (Amended 1/2005): • 5 ppmv for >110 mmbtu/hr units • 25 ppmv for units 40-100 mmbtu/hr	San Joaquin Rule 4306 (Amended 10/18/08) has the following limits: NOx limits for refinery gas: • 5 ppmv for units >110 mmbtu/hr; • 25 ppmv for units 65-110 mmbtu/hr; and • 30 ppmv for 5-65 mmbtu/hr units San Joaquin Rule 4320 (Amended 9/5/08) has the following limits for refinery gas: • 5 ppmv for >110 mmbtu/hr units • 5 - 6 ppmv for units between 20 - 110 mmbtu/hr Compliance may be mitigated with annual emissions fee.	Further study the feasibility of lowering the NOx limits through: CMB-01 – Further NOx Reductions from RECLAIM
1110.2	NOx, VOC, CO	Emissions from Gaseous and Liquid Fueled Engines (Amended 7/9/2010)	Rule 1110.2 has NOx, VOC, CO limits for all stationary and portable engines over 50 brake horse power (bhp). In general, the limits applicable to 1) stationary, non-emergency engines by 7/1/2011, and 2) biogas (landfill and digester gas) engines by 7/1/2012 are:	San Joaquin Valley Rule 4702 (Amended 8/19/2011) has NOx, VOC, CO and SOx limits for engines rated over 25 bhp. For engines over 50 bhp: - By 1/1/2017, the limits for spark-ignited engines are: • 11 ppmv NOx	Further study the feasibility of lowering the NOx limits through: CMB-01 – Further NOx Reductions from RECLAIM

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
			• 11 ppmv NOx • 30 ppmv VOC • 250 ppmv CO Limits for new non-emergency engines driving electrical generators are: • 0.07 lbs NOx per MW-hr • 0.20 lbs CO per MW-hr • 0.10 lbs VOC per MW-hr NOx limits for low usage biogas engines: • 36 ppmv, engines ≥ 500 bhp 45 ppmv, engines < 500 bhp VOC and CO limits for low usage biogas engines: • 40 ppmv VOC, landfill gas • 250 ppmv VOC, digester gas • 2000 ppmv CO. Portable and agricultural engines are not subject to the general limits listed above. Many of Rule 1110.2 engines are in RECLAIM, and RECLAIM will be amended to incorporate feasible BARCT.	• 250 ppmv VOC (rich-burn) and 750 ppmv VOC (lean burn), and • 2000 ppmv CO - Engines used in agricultural operations (AO), or fueled with waste gas, or limited used, or cyclic loaded and field gas fueled are subject to higher limits than the above - In general, all compression ignited engines must meet EPA Tier 4 standards. Engines between 25 bhp - 50 bhp, non agricultural operations (AO), must meet federal standards 40CFR Part 60 Subpart IIII and JJJJ. The SOx limits are: 1) Natural gas, propane, butane, LPG, or combination, or 2) 5 grains/100 scf for gaseous fuel, or 3) 15 ppmv liquid fuel, or 4) CA reformulated gasoline for spark-ignited engines, or 5) CA reformulated diesel for compression ignited engines, or 6) 95% control.	

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1111	NOx	NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Amended 11/6/09)	40 nanograms per joule heat output until 2014. A lower standard of 14 ng/J is required with staggering compliance dates from 2014-2018.		
1112	NOx	Emissions of Oxides of Nitrogen from Cement Kilns (Amended 6/6/86)	Applicable to gray cement only. 11.6 lbs/ton clinker averaged over 24 hours and 6.4 lbs/ton clinker averaged over 30 days. Subsumed by RECLAIM. RECLAIM, amended 1/2005 version, had no recommendation for cement kiln BARCT. However, RECLAIM BARCT analysis is an on-going process and will be evaluated every three years.		Further study the feasibility of lowering the NOx limits through: CMB-01 – Further NOx Reductions from RECLAIM
1117	NOx	Emissions of Oxides of Nitrogen from Glass Melting Furnaces (Amended 1/6/84)	4 lb/NOx per ton of glass pulled. Flat glass and fiberglass melting furnaces are exempt. Many of these R1117 units are in RECLAIM. RECLAIM (Amended 1/2005 version) had no BARCT recommendation for this class. However, BARCT analysis is an on-going process and will be reevaluated every three years.	San Joaquin Rule 4354 – Glass Melting Furnaces (Amended 5/19/2011) have NOx, CO, VOC, SOx limits. There are several options for the NOx limits: • Container Glass: 1.5 lbs/ton (rolling 30-day average) • Fiberglass: 1.3-3 lbs/ton (24-hour average)	Further study the feasibility of lowering NOx limit through: CMB-01 – Further NOx Reductions from RECLAIM

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1117 (Cont.)				• Flat Glass: 2.9 lbs/ton (30-day average) – 3.7 lbs/ton (24-hour average) The SOx limits are: • Container Glass: 0.9-1.1lbs/ton (rolling 30-day average) • Fiberglass: 0.9 lbs/ton (rolling 24-hour average) • Flat Glass: 1.2 lbs/ton (30-day average) – 1.7 lbs/ton (24-hour average) The VOC limits are: • Container or Fiberglass: 0.25 lbs/ton or 20 ppmv • Flat Glass: 0.10 lbs/ton or 20 ppmv.	
1121	NOx	Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters (Amended 9/3/2009)	15 ppmv at 3% O2, dry input (or 10 ng/j output) for all stationary water heaters; and 55 ppmv at 3% O2, dry input (40 ng/j output) for mobile water heaters.	Other Districts' plans propose to accelerate replacements of old water heaters with electric units or new highly-efficient lower-emitting water heaters with the use of incentives.	Further study the possibility of using incentives to promote electric heaters through: INC-01 – Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx] In addition, further consider the feasibility of technology transfer through: CMB-03 – Reductions from Commercial Space Heating

TABLE VI-5

Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1134	NOx	Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Amended 8/8/97)	Standard = Reference Limit x (Unit Efficiency/25%), where reference limit depends on size of units, varying from 9 ppmv for units rating at equal to or larger than 10MW to 25 ppmv for units rating from 0.3 MW to less than 2.9 MW. RECLAIM, amended 1/2005 version, indicated that 5 ppmv was achieved in practice but not cost effective, therefore did not propose BARCT. This analysis may need to be revised based on new information. RECLAIM BARCT is an on-going process that is planned to be reviewed every 3 years.	Bay Area, Regulation 9, Rule 9 (Adopted 12/6/06) contains the following limits: • 9 ppmv for units between 250-500 mmBTU/hr and • 5 ppmv for units more than 500 mmBTU/hr San Joaquin Valley Rule 4703, (Amended 8/17/06) requires 3 ppmv for combined cycle >10 MW, and standards from 5 – 50 ppmv for other units. Sacramento Rule 413 (Amended 03/24/05) requires 9 – 25 ppmv depending on size of units, but are independent on equipment efficiency. Ventura Rule 74.9 (Amended 11/08/05) requires 25 – 125 ppmv depending on fuel type but are independent from equipment size and efficiency. Control efficiency 90% - 96%. In addition, all units have to meet 20 ppmv NH3.	Further study the feasibility of lowering the NOx standard and establish ammonia standard through: CMB-01 – Further NOx Reductions from RECLAIM MCS-01 – Application of All Feasible Measures Assessment (for non-RECLAIM facilities)

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1135	NOx	Emissions of Oxides of Nitrogen From Electric Power Generating Systems (Amended 7/19/91)	Mass emission limits and emission reduction goals for utility boilers. Only City of Glendale is subject to Rule 1135, which is allowed to meet 0.2 lb/MW-hr (or a daily mass limit of 390 lb NOx per day, or an annual limit of 35 tons per year). Other utility boilers are in RECLAIM subject to declining NOx allocations which were determined based on a level of 7 ppmv = 0.07 lb/MW-hr = 0.008 lb/mmbtu, assuming a heat rate of 8130 Btu/kw-hr. The utility boilers are operated at various BARCT levels from 5 - 30 ppmv. (Note)	Ventura Rule 59 (amended 7/15/97) requires: • 0.1 lb NOx/MW-Hr for utility boilers and • 0.04 lb/MW-hr for auxiliary boilers. San Joaquin Rule 4306 – Phase 3 (amended 3/17/2005) requires boilers more than 20 mmbtu/hr to comply with the following options: • Standard option of 9 ppmv (or 0.011 lb/mmbtu) complied by 2005-2007, or • Enhanced option of 6 ppmv (or 0.007 lb/mmbtu) complied by 2006-2008. (Assuming a heat rate of 8130 Btu/kw-hr, 6 ppmv is about 0.06 lb/MW-hr.)	Further study the feasibility of lowering the emission targets through: CMB-01 – Further NOx Reductions from RECLAIM facilities MCS-01 – Application of All Feasible Measures Assessment

Note: RECLAIM facilities have flexibility to operate their utility boilers provided that the total facility emissions must be at or below their allocations determined based on a level of 7 ppmv. Regarding BARCT levels, according to Marty Kay and John Yee, the utility boilers at Southern California Edison, Department of Water and Power, and City of Burbank are operated at a level from 5 – 7 ppmv (1-hr to 1-month average time) whereas City of Pasadena boilers are operated at a level of 30 ppmv. In addition, since heat rate (mmbtu per kw-hr) varies with each utility boiler, District staff used 8130 BTU/kw-hr to convert the ppmv to lb/MW-hr for the unit operated by City of Glendale.

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146	NOx	Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (Amended 9/5/2008)	Applicable to units rating of more than 5 mmbtu/hr. Current NOx limits: • For digester gas: 15 ppmv • For landfill gas: 25 ppmv • For refinery gas: 30 ppmv (the 2008 amendment did not revise limits for refinery gas) • For other types of fuels: 5 ppmv for ≥75 mmbtu/hr, natural gas; 30 ppmv for ≥75 mmbtu/hr, other fuels; and 5 or 9 ppmv for 20–75 mmbtu/hr units CO limit: 400ppmv Many Rule 1146 units are in RECLAIM. RECLAIM (Amended 1/2005 version) contains the following NOx limits: • For refinery gas: 5 ppmv for units > 110 mmbtu/hr; and 25 ppmv for units < 110 mmbtu/hr units • For other units: 9 ppmv for units > 20 mmbtu/hr; and 12 ppmv for units >2 mmBTU/hr	Sacramento Rule 411 (Amended 10/27/05) limits for gaseous fuel are 9 ppmv for units greater than 20 mmbtu/hr, and 15 ppmv for units from 5 to 20 mmbtu/hr. San Joaquin Rule 4306 (Amended 10/18/08) has the following limits: NOx limits: • 30 ppmv for 5-65 mmbtu/hr units using refinery gas. For units from 40 – 100 mmbtu/hr, refer to the comparison under Rule 1109. • For other types of fuels: 9 ppmv for >20 mmbtu/hr units; 15 ppmv for ≤20 mmbtu/hr units (6 – 9 ppmv for enhanced options) • Other units: 15 – 30 ppmv CO limit: 400 ppmmv. San Joaquin Valley further reduces NOx, CO, SO_2 and PM10 emissions by adopting Rule 4320 on 10/16/08. The limits in Rule 4320 are:	Further explore the feasibility of lowering the NOx standards for Rule 1146 (e.g. refinery fuels, digester and landfill gases) and RECLAIM through: CMB-01 – Further NOx Reductions from RECLAIM

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146 (Cont.)	NOx			NOx limits: • For refinery gas: 5 – 6 ppmv for units between 20-110 mmbtu/hr; 6 – 9 ppmv for units between 5 - 20 mmbtu/hr; and 9 ppmv for units firing of less than 50% by vol PUC quality gas. Refer to the comparison under Rule 1109 for 40 mmbtu/hr units and above using refinery gas. • For oil field generators: 5 - 7 ppmv for units greater than 20 mmbtu/hr; 6 – 9 ppmv for units larger than 5 but less than 20 mmtu/hr; and 9 ppmv for units firing of less than 50% by vol PUC quality gas • For low usage units: 9 ppmv • For units at a wastewater treatment facilities firing on less than 50% by vol PUC quality gas: 9 ppmv • For other units: 5 – 7 ppmv for units larger than 20 mmbtu/hr; and 6 – 9 ppmv for units between 5 mmbtu/hr and 20 mmbtu/hr Compliance may be mitigated with annual emission fees.	

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146.1	NOx	Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (Amended 9/5/2008)	Applicable to units rating from 2 mmbtu/hr to 5 mmbtu/hr. NOx limits: • Atmospheric Units: 12 ppmv • Digester gas: 15 ppmv • Landfill gas: 25 ppmv • All others: 9 ppmv CO limit: 400 ppmv. Many Rule 1146.1 units are in RECLAIM, and RECLAIM (Amended 1/2005 version) BARCT analysis recommended 12 ppmv for less than 20 mmbtu/hr units based on ultra low NOx technology that is achieved in practice. RECLAIM (Amended in 2005) has a limit of 12 ppmv NOx for boilers in this size range.	Bay Area Rule 9-11 (Amended 5/17/00) has following limits for boilers using gaseous fuel 1) 10 ppmv for boilers with rated input greater than 1.75 mmbtu/hr, 2) 25 ppmv for boilers from 1.5-1.75 mmbtu/hr, 3) 30 ppmv for boilers less than 1.5 million btu/hr. Non-gaseous fuel combustion devices have higher limits than gaseous fuel devices. San Joaquin Rule 4307 (Amended 5/19/2011) has the following limits: NOx limits: - For New or Replacement Units: Atmospheric Units: 12 ppmv, and Non-Atmospheric Units: 9 ppmv - For Retrofit Units: 30 ppmv burning gaseous fuels; and 40 ppmv burning liquid fuels Sulfur limits for SO2: - For natural gas, propane, butane, or LPG: 5 grains of total sulfur per 100 scf, or 9 ppmv SO2, or 95% control - For liquid fuels: 15 ppmv sulfur	Further study the feasibility of promoting the use of cleaner units through incentives through one of the following: INC-01 – Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]

TABLE VI-5 (continued)
Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146.2	NOx	Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers (Amended 5/5/06)	Applicable to units less than 2 mmbtu/hr. Current limits are: • 20 ppmv for units from 400,000 btu/hr – 2 mmbtu/hr • 55 ppmv for units rating less than 400,000 btu/hr	San Joaquin Valley Rule 4308, (Amended 12/17/09) requires: • 20 ppmv for units used PUC gas from 75,000 btu/hr – 2 mmbtu/hr • 30 ppmv for units from 400,000 btu/hr - 2 mmbtu/hr used other types of fuels • 77 ppmv for units rating from 75,000 btu/hr – 400,000 btu/hr used other types of fuels	Further study the feasibility of promoting the use of cleaner units through: INC-01 – Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]
2000 - 2015	NOx, SOx	RECLAIM (Amended 5/6/05)	Include facility allocations for NOx and SOx for RECLAIM facilities.	Since other Districts do not have RECLAIM, refer to comparison for individual rules such as Rule 1146, 1146.1, 1110.2 etc.	Further review BARCT through: CMB-01 – Further NOx Reductions from RECLAIM . District has set most stringent BARCT for SOx sources in the 2010 RECLAIM Amendments.

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1106	VOC	Marine Coating Operations (Amended 1/13/95)	Coating-specific emission limits from 275 – 780 g/L. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 85% efficiency. Solvent cleaning operations must comply with Rule 1171.	Ventura Rule 74.24 (Amended 11/11/03) generally has the same limits as South Coast Rule 1106, except the limit for special marking of items such as flight decks, ship numbers is 420 g/L (490 g/L in Rule 1106) Bay Area Rule 8-43 (Amended 10/16/02) generally has the same limits as South Coast Rule 1106, except it has lower limit for pretreatment wash primer at 420 g/L (780 g/L in Rule 1106)	Further study the potential of lowering the emission standards for this source category through: CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants
1106.1	VOC	Pleasure Craft Coating Operations (Amended 2/12/99)	Coating-specific emission limits from 340 – 780 g/L. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley's Rule 4603 (Amended 9/17/09) limit for teak primer, wood sealer, and clear wood varnish is 420 g/L, which is more stringent than the limits in Rule 1106.1 (i.e. 775 g/L for teak primer, 550 g/L for clear wood sealers, and 490 g/L for clear wood varnishes.)	Further study the potential of lowering the emission standards for this source category through: CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants
1113	VOC	Architectural Coatings (Amended 6/3/2011)	Coating-specific emission limits from 50 g/L – 730 g/L. Allow averaging, scheduled to be phased out on January 1, 2015.		Further study the potential of lowering the emission standards for this source category through: CTS-01 – Further VOC Reductions from Architectural Coatings (R1113)

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1107	VOC	Coating of Metal Parts and Products (Amended 1/6/06)	Coating-specific emission limits from 2.3 lbs/gal – 3.5 lbs/gal. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 5 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	Ventura Rule 74.12 (Amended 1/6/06) generally has the same coating-specific limits as South Coast Rule 1107, except in the following categories: • Limit for metallic coating is 3 lbs/gal (3.5 lbs/gal in Rule 1107); • Limit for camouflage is 3 lbs/gal (3.5 lbs/gal in Rule 1107); • Limit of pretreatment coatings is 2.3 lbs/gal (3.5 lbs/gal in Rule 1107) • Overall minimum control efficiency is 90%, higher than Rule 1107 requirement at 85% San Joaquin Valley Rule 4603 (Amended 9/17/09) have more stringent limits than Rule 1107 for baked camouflage and baked metallic coating at 360 g/L (420 g/L in Rule 1107)	Explore the feasibility of lowering the VOC limits considering the diversity of applications, and if feasible, implement through the following control measure: CTS-02 – Further Emission Reduction from Miscellaneous Coatings. Adhesives, Solvents, and Lubricants, or MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1115	VOC	Motor Vehicle Assembly Line Coating Operations (Amended 5/12/95)	Limits from 1.2 lbs VOC/gal coating for electrophoretic primer to 15 lbs/gal of applied solids for primer, primer surfacer and topcoat. Cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4602, (Amended 9/17/09) has more stringent limits for: 1) Primer at 0.7 lbs/gal and 2) Primer surface and topcoat at 12 lbs/gal	Further lowering the VOC limits
1118	All	Refinery Flares (Amended 11/4/05)	• Minimize flare emissions & require smokeless operations • Specify SO_2 gradually decreasing performance target to less than 0.5 tons per million barrels of crude by 2012. • If the performance target is exceeded, the operator must 1) pay mitigation fee; or 2) submit a Flare Mitigation Plan to reduce emissions. • Require Cause Analysis for event exceeding 100 lbs VOC, 500 lbs of SO2, or 500,000 scfm of vent gas, excluding planned shutdown, startup and turnarounds • Require 160 ppmv H2S, 3 hour average by 1/1/2009, and no limits for NOx, VOC, PM and CO.	U.S. EPA suggested the District to further re-evaluate Rule 1118 (FR Vol 76 No 217, Nov 9, 2011, CBE comments). San Joaquin Valley Rule 4311 (Amended 6/18/09) has VOC/NOx limits for ground-level enclosed flares; SO_2 Targets (1.50 tons/million barrels of crude by 2011, and 0.5 tons/million barrels by 2012); Flare Minimization Plan for refinery flares more than 5 mmbtu/hr; and operational requirements for all flares that have potential to emit more than 10 tons/yr VOC and more than 10 tons/yr of NOx. Bay Area Rule 12-12 (Adopted 4/5/06) does not specify a declining SO2 target and does not contain a mitigation fee option.	Explore the possibility of further minimizing flare related events, through: MSC-03 – Improved Start-Up, Shutdown and Turnaround Procedures In addition, further study the feasibility of reducing emissions of landfill flares through: CMB-02 – NOx Reductions from Biogas Flares

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1122	VOC	Solvent Degreasers (Amended 5/1/09)	Contain various work practice and design requirements.		Further study to assess the feasibility of reducing emissions through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants
1124	VOC	Aerospace Assembly and Component Manufacturing Operations (Amended 9/21/01)	Coating-specific emission limits from 160 – 1000 g/L. Specific high transfer coating applications (e.g. HVLP spray). In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4605 (Amended 6/16/2011) has the following limits that are more stringent than those in Rule 1124: • Flight Test Coatings = 600 g/L (840 g/L in Rule 1124) • Fastener Sealant = 600 g/L (675 g/L in Rule 1124) Sacramento Rule 456 (Amended 10/23/08) has the following limits that are more stringent than those in Rule 1124: • Conformal Coating = 600 g/L (Rule 1124 limit is 750 g/L)	Explore the feasibility of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1124 (Cont.)				• Fire Resistant Coatings = 600 g/L. (Rule 1124 limits are 650 g/L for Commercial; 800 g/L for Military) • High-Temperature Coating = 420 g/L. (Rule 1124 limit is 850 g/L) • Mold Release Coatings = 762 g/L. (Rule 1124 limit is 780 g/L) • Radiation Effect = 600 g/L. (Rule 1124 limit is 800 g/L) • Rain Erosion Resistant Coating = 600 g/L in All Other Category. (Rule 1124 limit is 800 g/L) Ventura 2006-2008 Triennial Assessment and Plan Update has a control measure to require 25 g/L VOC limit for cleaning solutions and remove the 45 mmHg vapor pressure allowance. (Rule 1124 limits for cleaning solutions and strippers are 200 g/L (or 45 mmHg vapor pressure) and 300 g/L (or 9.5 mmHg vapor pressure)	

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1125	VOC	Metal Container, Closure, and Coil Coating Operations (Amended 3/7/2008)	Coating-specific emission limits from 0 g/L (for non food cans) – 660 g/L. Specific high transfer coating applications (e.g. HVLP spray). In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency, which is equivalent to an overall control efficiency of 85%. Solvent cleaning operations must comply with Rule 1171.	The following limit in San Joaquin Rule 4604 (Amended 9/20/07) are more stringent than those in Rule 1125: • Two-Piece Interior Body Spray = 420 g/L (440 g/L in Rule 1125) • Three-Piece Interior Body Spray = 360 g/L (510g/L in Rule 1125) In addition, SJV Rule 4604 have many limits that are not listed in Rule 1125 such as 20 g/L for end seal compounds and 225 g/L for two-piece interior sheet base coating and over-vanish. Sacramento Rule 452 (Amended 9/25/2008) has the following more stringent limits than Rule 1125: • Two-Piece Interior Body Spray = 420 g/L (440 g/L in Rule 1125) • Three-Piece Interior Body Spray = 360 g/L (510g/L in Rule 1125)	Explore the feasibility of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants, or MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1130	VOC	Graphic Arts (Amended 10/8/99)	VOC content limits: 80 g/l – 100 g/l for fountain solution, 150 g/l for adhesives, 225 g/l - 300 g/l for inks and coatings. In lieu of meeting specific emission limits, control device with overall control efficiency from 75% - 85% can be used to achieve equal or better emission reductions. VOC limits for cleaning solutions for printing presses are in Rule 1171 ranging from 25 g/l (0.21 lb/gal) for flexographic printing to 100 g/l (0.83 lb/gal) for lithographic printing (even though 500 g/l is allowed up to end of year 2007.)	The following limits in San Joaquin Valley Rule 4607 (Amended 12/18/08) are more stringent: 1) 95% control efficiency for heat-set web offset lithographic or letterpress printers that emit greater than 25 tons per year VOC; 2) 1.6% VOC content for fountain solution used in heat-set lithographic printers, 5% for fountain solution used in cold-set and sheet-fed lithographic printers, and 8% for fountain solution used in other presses. Sacramento Rule 450 is more stringent in the following: 1) overall control efficiency of 95% for heat-set web offset lithographic and letterpress printing and 80% for flexible package printing (Rule 1130 requires only 75% control efficiency) ; 2) VOC in fountain solution is lower, generally from 1.6% to 5%; 3) electronic circuit limit is 800 g/l (850 g/l in Rule 1130.1)	Further study to assess the feasibility of increasing the overall control efficiency and reducing the alcohol usage in fountain solution through the implementation of: MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1130 (Cont.)				Bay Area, Regulation 8, Rule 20 (Amended 11/19/08) requires 8% VOC content in fountain solution. In addition, the rule requires recordkeeping for digital printing, cleaning and stripping of UV or electron beam-cured inks for further study potential emission reductions in a near future. Ventura Rule 74.19 (Amended 6/14/11) requires low VOC content in fountain solution used in lithographic presses. In addition, the U.S. EPA CTG for lithographic and letterpress, September 2006, recommends: • Destruction efficiency of 90% to 95% depending on date of installation (or 20 ppmv outlet concentration) for heat-set web with potential to emit, prior to controls, of at least 25 tpy. • For operations emitting 15 lb/day, fountain solution must be 1) 1.6% alcohol or less, or	

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1130 (Cont.)				2) 3% with refrigerated chiller or 3) 5% alcohol substitute for heat-set web presses; 4) 5% alcohol for sheet-fed presses; 5) 5% alcohol substitute and no alcohol in fountain solution for cold-set web presses. The EPA CTG for rotogravure and flexographic, adopted in September 2006, recommends control efficiency of 80% for presses installed after March 1995, and 65% - 75% for older presses.	
1130.1	VOC	Screen Printing Operations (Amended 12/13/96)	VOC content limits ranges from 400 g/l – 800 g/l for materials used in screen printing. In lieu of specific emission limits, control device can be used to achieve equal or better reductions, at least 95%.	Bay Area, Regulation 8, Rule 20 (Amended 11/19/08) has more stringent limit for adhesives at 150 g/L (400 g/L in Rule 1130.1). Sacramento Rule 450 (Amended 10/23/08) has more stringent limits than Rule 1130.1 in the following areas: 1) limit for electronic circuit ink is 800 g/L (850 g/L in Rule 1130.1); 2) limit for adhesives is 150 g/L (400 g/L in Rule 1130.1)	Further study to assess the feasibility of reducing the VOC limits for adhesives through: MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1132	VOC	Further Control of VOC from High Emitting Spray Booths (Amended 5/7/04)	Further reduce emissions by 65% from the baseline primarily through the installation of control devices, beyond and above the use of coatings that comply with existing coating rules.		
1136	VOC	Wood Products Coatings (Amended 6/14/96)	VOC content limits range from 2.3 – 6.3 lbs/gal VOC. Averaging provisions and add-on control are allowed. Transfer efficiency is at least 65%, or operator must use certain type of equipment (e.g. HVLP). Solvent cleaning operations must comply with Rule 1171.	Ventura Rule 74.30 (Amended 6/27/06) has more stringent limit for high-solid stains on new wood products at 2 lbs/gal (2.9 lbs/gal in Rule 1136). In lieu of coating specific limits, control equipment achieving 90% efficiency is required. No averaging provisions in Ventura. San Joaquin Valley Rule 4606 (Amended 10/16/08) is more stringent in the following areas: • Rule 1136 allows the use of a stripper with limits higher than 350 g/L if the stripper has low vapor pressure of 2 mmHg. SJV does not have this allowance; • SJV Rule 4606 requires a min overall control efficiency of 85% - 90% for flat wood paneling products, whereas Rule 1136 does not have control efficiency requirement.	Explore the feasibility of lowering the VOC limits for wood products coatings through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants, or MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1136 (Cont.)				Bay Area, Regulation 8, Rule 32, (Amended 8/5/09) has lower limits for surface preparation and cleanup, including stripping, at 0.21 lbs/gal.	
1144	VOC	Metalworking Fluids and Direct-contact Lubricants (Amended 7/9/2010)	Various limits from 50 g/L – 340 g/L. Add-on control at 90% capture efficiency, 95% control efficiency (or 5 ppmv outlet)		Further study the potential of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1151	VOC	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (Amended 12/2/05)	VOC content limits range from 250 – 840 grams VOC per liter. Averaging provisions are allowed. High transfer coating equipment (e.g. HVLP) is required. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4602 (Amended 9/17/09) is more stringent in the following areas: 1) adhesive at 250 g/L (540 g/L in Rule 1151), 2) gasket/gasket sealing at 200 g/L (400 g/L in Rule 1151), and 3) truck bed liner coating at 200 g/L (310 g/L in Rule 1151) Sacramento Rule 459 (Amended 8/25/11) is more stringent in the following areas: 1) multi-color coating at 520 g/L for mobile equipment driven on rails (680 g/L in Rule 1151), 2) truck bed liner coating at 200 g/L (310 g/L in Rule 1151) Bay Area, Regulation 8, Rule 45 (Amended 12/3/08) is more stringent in the following areas: 1) VOC limit for surface preparation and cleanup, including stripping, of 0.2 lbs/gal or 2) a minimum 85% overall control efficiency.	Further study the feasibility of lowering the VOC limits for coatings through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants, or MSC-01 – Application of All Feasible Measures Assessment
1162	VOC	Polyester Resin Operations (Amended 7/8/05)	VOC limits (monomer content) from 10-48% by weight or alternatively 90% control efficiency for add-on control	Regulation 8, Rule 50 (Amended 12/2/09) is similar to Rule 1162, except the limit for corrosion resistant resin is more stringent at 40% - 46% (48% in Rule 1162). The rule allows some usage of acetone	Further study the feasibility of lowering the VOC limits through: MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1168	VOC	Adhesive and Sealant Applications (Amended 1/7/05)	VOC limits for solvents range from 30 – 775 lbs VOC per gallon. Require the use of high transfer efficiency equipment (e.g. HVLP spray). In lieu of meeting the VOC limits, using add-on control with 80% control efficiency is allowed.	San Joaquin Valley Rule 4653 (Amended 9/16/2010) has more stringent limits in the following areas: • 100 g/L for Cellulosic Plastic Welding Adhesive, 100 g/L for Styrene Acrylonitrile Welding Adhesive, and 200 g/L for Reinforced Plastic Composite Adhesive (Rule 1168 limit is 250 g/L limits for all three categories) • Minimum overall control efficiency is 85% (80% in Rule 1168)	Further study the feasibility of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1171	VOC	Solvent Cleaning Operations (Amended 5/1/2009)	VOC limits for solvents are 25 g/l in general, and have a 100-800 g/l VOC for specific cleaning operations. In lieu of meeting the VOC limits, add-on control having 90% collection efficiency and 95% destruction efficiency or meeting 50 ppmv outlet concentration can be used. The rule however only requires (70%)(95%) = 66.5% overall control efficiency for graphic arts and screen printing applications	The U.S. EPA RACT published in September 2006 limit is 50 g/l or an overall control efficiency of 85%. The U.S. EPA is not recommending limits beyond 50 g/l; but also recommends states to adopt higher limits based on individual performance requirements of specific applications. Rule 1171 meets the U.S. EPA RACT.	Further study the feasibility of lowering the VOC limits and increasing the overall control efficiency requirement for control devices located at graphic arts facilities through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants,
462	VOC	Organic Liquid Loading (Amended 5/14/99)	Limit in Rule 462 is 0.08 lbs per 1000 gallons of liquid loaded for Class A facility loading of 20,000 gallons or more. This limit is not applicable to small facilities (Class B and C).	Bay Area, Regulation 8, Rule 33 (Amended 4/15/09) has a limit of 0.04 lbs/1000 gallons of liquid loaded and requires stringent monitoring requirements	Further study to assess the feasibility of reducing the VOC limits through: MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations – VOC, PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1133, 1133.1, 1133.2	PM, VOC, NH3	Composting, Co-Composting, and Related Operations (Rule 1133, Adopted 1/10/2003; Rule 1133.1, Amended 7/8/2011; and Rule 1133.2, Adopted 1/10/2003)	Various performance standards. Air pollution control must have 80% control efficiency or greater. Existing operations must reduce up to 70% baseline VOC and ammonia emissions. Baseline emission factors are 1.78 lbs VOC/ton throughput and 2.93 lbs NH3/ton throughput.	San Joaquin Rule 4565 – Biosolids, Animal Manure, and Poultry Litter Operations (Adopted 3/15/07) and Rule 4566 – Organic Material Composting Operations (Adopted 8/18/11) have various operational requirements for these operations as well as the operators who landfills, composts, or co-composts these materials. The applicability of Rules 4565/4566 is broader than the applicability of Rule 1133.3. In addition, Rules 4565/4566 include additional mitigation measures to control VOC from composting active piles (e.g. maintain minimum oxygen concentration of 5%, moisture content of 40%-70%, carbon to nitrogen ratio of 20-1). San Joaquin's rule does not address chipping & grinding as in Rule 1133.1.	Further study the feasibility of further control through: MCS-02 – Further Emission Reductions from Green Waste Processing
1133.3	VOC NH_3	Emission Reductions from Greenwaste Composting Operations (Adopted 7/8/2011)	Include requirements for composting greenwaste, or greenwaste in combination of manure or foodwaste. Include various performance standards. Require air pollution control with efficiency of 80% or greater for operations greater than 5000 tons/year of foodwaste. For operations less than 5000 tons/year, require the composting piles to be covered, watered, and turned, or operated with measures that reduce at least 40% VOC emission and 20% NH_3 emissions.		

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1138	PM	Control Of Emissions From Restaurant Operations (Amended 11/14/97)	Require catalytic oxidizer for chain-driven charbroilers. Exemption provided for under-fired charbroilers and units cooking less than 875 lbs/week, but does not contain any specific limits.	San Joaquin Valley Rule 4962 (Amended 9/17/09) requires the emissions from the restaurant charbroilers be controlled by catalytic oxidizer with minimum control efficiencies of 86% for VOC and 83% for PM10. Bay Area Regulation 6, Rule 2 (Adopted 12/5/07) sets limit for both chain-driven charbroilers at 1.3 lbs PM10 and 0.32 lbs ROG per 1000 lbs beef cooked) and under-fired charbroilers at 1 lbs PM10 per 1000 lbs beef cooked) Ventura Rule 74.25 (Adopted 10/12/04) which has equivalent requirements as in Rule 1138.	Further study the feasibility of regulating under-fired charbroilers through: BCM-03 – Emission Reductions from Under-Fired Charbroilers Note that the District has currently funded UCR - CE-CERT to investigate on the control technologies for under-fired charbroilers.

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1155	PM	Particulate Matter Control Devices (Adopted 12/4/2009)	PM standards for PM control devices at 0.01 gr/dcsf for existing large baghouses >7500 square feet. Good operational practices to reduce PM emissions	Bay Area, Draft Regulation 12, Rule 13 is scheduled for a Public Hearing in summer of 2012. This rule is to implement Bay Area Control Measure SSM1 in the 2010 Clean Air Plan. The rule is applicable to facilities that melt or process metals (foundries, forges, heat treatment of metals, and metal recycling operations). The focus is to promote the use of high efficiency filters (e.g. Gore-Tex bags). Proposed limits are: • 0.002 gr/dscf for flow rate of 25,000 dscf per min or higher; and • 0.004 gr/dscf for flow rates less than 25,000 dscf per min.	Further study the feasibility of lowering the PM limits through: MCS-01 – Application of All Feasible Measures Assessment
444	All	Open Burning (Amended 11/7/2008)	Contains requirements and prohibitions for open burning to minimize emissions and smoke impacts to the public.	San Joaquin Valley Rule 4103 (Amended 4/15/2010) contains additional best management practices compared to Rule 444 such as best management practices to control open burning of weeds. Bay Area, Reg 5, sets requirements for open burning, and was to forbid recreational burning during curtailment periods.	Further study to include additional good management practices and a possibility of restricting burning during episodic curtailment periods through: BCM-02 – Further Reductions from Open Burning

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
404, 468, and 469	PM	Rule 404 – Particulate Concentration (Amended 2/7/86) Rule 468 – Sulfur Recovery Units (Amended 10/8/76) Rule 469 – Sulfuric Acid Units (Amended 2/13/81)	PM limits vary from 0.01gr/dscf to 0.19 gr/dscf in Rule 404 depending on exhaust flow rates. Sulfuric acid mist limit in Rule 469 is 0.3 lbs per ton of acid produced (approximately 0.1 gr/dscf) Rule 468 for sulfur recovery units does not contain any PM standard.	Bay Area, Regulation 6, Rule 1 (Adopted 12/5/07) contains the following limits: • Generally, PM limit is 0.15 gr/dscf • Sulfuric Acid Manufacturing Plants: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.04 gr/dscf • Sulfur Recovery Units: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.08 gr/dscf	Further study the feasibility of reducing the emission limits through: MCS-01 – Application of All Feasible Measures Assessment
445	PM	Wood Burning Devices (Adopted 3/7/08)	Contains requirements for wood burning devices to minimize emissions and smoke impacts to the public.	San Joaquin Valley Rule 4901 (Amended 10/16/2008) contains additional best management practices compared to Rule 445.	Further study to include additional good management practices and the possibility of restricting burning during the episodic curtailment periods through: BCM-01 – Further Reductions from Residential Wood Burning Devices

ATTACHMENT

CALIFORNIA AIR RESOURCES BOARD
Mobile Source RACM Analysis for the South Coast 2012 Final AQMP

Given the significant emission reductions needed for attainment in California, ARB has adopted some of the most stringent control measures nationwide for on-road and off-road mobile sources and the fuels that power them. These measures target both new and in-use equipment. And while California first focused on cleaning up cars – new car emissions have been reduced by 99 percent – the scope of California's program is vast. The State has implemented regulations and programs to reduce emissions from freight transport equipment, including heavy-duty trucks, ocean going vessels, locomotives, harbor craft, and cargo handling equipment. In addition, the State has standards for lawn and garden equipment, recreational vehicles and boats, and other newly manufactured off-road equipment. California has also adopted many measures that focus on achieving reductions from in-use mobile sources that include accelerated replacement of older equipment with newer, less polluting equipment; more stringent inspection and maintenance requirements; and operational requirements such as truck and bus idling restrictions and speed reduction requirements for ocean going vessels.

California has unique authority under Clean Air Act section 209 to adopt and implement new emission standards for many categories of on-road vehicles and engines, and new and in-use off-road vehicles and engines. Use of this authority is subject to U.S. EPA waiving the applicable federal standard upon their finding that the standards adopted by California are, in the aggregate, at least as stringent as the comparable federal standard.

To support the attainment plans submitted to U.S. EPA in 2007 for 8-hour ozone and PM2.5, ARB undertook an extensive public consultation process to identify potential SIP measures. New measures developed by ARB as part of this 2007 State Strategy focused on cleaning up the in-use fleet, and increasing the stringency of emissions standards for a number of engine categories, fuels, and consumer products. These measures build on ARB's already comprehensive program that addresses emissions from all types of mobile sources.

In 2011, U.S. EPA approved the State mobile source control program as being RACM in the context of the 2007 and 2008 South Coast and San Joaquin Valley PM2.5 plans (76 FR 69928 at 69933). In its proposed approval of the 2007 South Coast PM2.5 Attainment Plan, U.S. EPA recognized that the "State of California has been a leader in the development of some of the most stringent control measures nationwide for on-road and off-road mobile sources and the fuels that power them" (76 FR 41562 at 41570). In the 2007 State Strategy, ARB identified and committed

to propose new defined measures for the sources under its jurisdiction. Of these new measures, U.S. EPA noted that "many, if not most, of these measures are being proposed for adoption for the first time anywhere in the nation" (76 FR 41562 at 41570).

California's comprehensive mobile source program continues to be RACM as it expands and further reduces emissions. The 2012 PM2.5 SIPs rely on additional regulations adopted since the State's last major SIP revision in 2007. In January 2012, ARB adopted the Advanced Clean Cars program, which combines the control of smog-causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2017 through 2025. The program was developed in tandem with the federal government over several years, including a joint fact-finding process with shared engineering and technical studies. Benefits from this new program are reflected in emission inventories used in the 2012 PM2.5 attainment plans.