

BOARD MEETING DATE: February 6, 2015

AGENDA NO. 22

PROPOSAL: Supplement to 24-hour PM<sub>2.5</sub> State Implementation Plan for South Coast Air Basin

SYNOPSIS: The purpose of this Supplement to the 24-hour PM<sub>2.5</sub> SIP for the South Coast Air Basin is to demonstrate attainment of the 2006 24-hour PM<sub>2.5</sub> National Ambient Air Quality Standard by 2015 under Clean Air Act, Title 1, Part D, Subpart 4, along with updates to the transportation conformity budgets, analysis of Reasonably Available Control Measures/Reasonably Available Control Technology, control measure commitments submitted in the 2012 AQMP, and other Subpart 4 requirements.

COMMITTEE: Mobile Source Committee, January 23, 2015, Reviewed

RECOMMENDED ACTIONS:

Adopt the attached resolution:

1. Determining that the Supplement to the 24-hour PM<sub>2.5</sub> SIP for the South Coast Air Basin is exempt from the requirements of CEQA; and
2. Approving the attached Supplement to the 24-hour PM<sub>2.5</sub> SIP for the South Coast Air Basin for Submittal into the SIP.

Barry R. Wallerstein, D.Env.  
Executive Officer

BB EC:PF:MK

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**Background**

The 2012 AQMP was approved by the SCAQMD Board in December 2012, with additional amendments approved in February 2013, and was subsequently submitted to CARB and the U.S. EPA for inclusion into the SIP. That plan demonstrated projected attainment of the 2006 24-hour PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS) (35 µg/m<sup>3</sup>) by 2014. However, a recent court decision (*Natural Res. Def. Council v. EPA*, 706 F.3d 428 (D.C. Cir. 2013)) compels U.S. EPA to evaluate the 24-

hour PM2.5 SIP under CAA, Title 1, Part D, Subpart 4 (hereafter “Subpart 4”) requirements specific to particulate matter, in addition to the general planning provisions of Subpart 1 that were previously used for PM2.5 SIPs. Subpart 4 provides for an attainment year of 2015 for “moderate” areas, one year later than the attainment year in the 2012 AQMP. Furthermore, preliminary ambient air quality data suggests that meeting the 2006 24-hour PM2.5 NAAQS ( $35 \mu\text{g}/\text{m}^3$ ) by the end of 2014 is not likely, largely due to unusually extreme drought conditions in the Basin. In addition, Subpart 4 Section 189(e) necessitates that control requirements applicable for major PM2.5 sources shall also apply to major sources of PM2.5 precursors unless it is determined by U.S. EPA to not be a significant contributor to PM2.5. PM2.5 has four major precursors, other than direct PM2.5 emissions, that contribute to the development of the ambient PM2.5: nitrogen oxide (NOx), sulfur oxides (SOx), volatile organic compounds (VOC), and ammonia.

It should be noted that U.S. EPA has proposed to find that the former 24-hour PM2.5 NAAQS ( $65 \mu\text{g}/\text{m}^3$ ) has been attained, along with the previous annual PM2.5 NAAQS of  $15 \mu\text{g}/\text{m}^3$  (79, FR, 72999, Dec 9, 2014). However, this Supplement relates to the most recent 24-hour PM2.5 NAAQS of  $35 \mu\text{g}/\text{m}^3$ . Attainment of the 2012 annual PM2.5 NAAQS of  $12 \mu\text{g}/\text{m}^3$  will be addressed in the upcoming 2016 AQMP.

### **Proposal**

SCAQMD staff is proposing to supplement the previous 24-hour PM2.5 SIP submittal to address Subpart 4 provisions and requirements with the following elements that are included in this Supplement:

- Demonstration of attainment of the 24-hour PM2.5 NAAQS by 2015 with a discussion of the effects of the drought on the attainment date as weight of evidence;
- Provide new transportation conformity budgets for 2015;
- Updated RACM/RACT analysis;
- Demonstration of compliance with CAA Subpart 4, Section 189(e) that applies to PM2.5 precursors, such as VOC and ammonia, and other precursor requirements; and
- Updated list of PM2.5 control measure commitments.

### **Air Quality Management Plan (AQMP) and Legal Mandates**

The 2012 AQMP included the following specific elements:

- Attainment demonstration of the 2006 24-hour PM2.5 NAAQS for 2014;
- A RACM/RACT analysis;
- 2014 transportation conformity budgets; and
- Control strategy including emission reduction commitments with adoption and implementation dates.

Since the SCAQMD Board approval of the 2012 AQMP in December 2012 with amendments in February 2013, two PM<sub>2.5</sub> control measures, BCM-01 (Further Reductions from Residential Wood Burning Devices) and BCM-02 (Further Reductions from Open Burning), were adopted in the form of amendments to Rules 445 (Wood Burning Devices) and 444 (Open Burning), respectively. Together, these amendments generated a total of 11.7 tons of PM<sub>2.5</sub> per day reductions on an episodic basis. These emission reductions were the only emission reduction commitments needed in the 2012 AQMP to meet the 2006 24-hour NAAQS in 2014. The only other emission reduction commitment in the 2012 PM<sub>2.5</sub> SIP was control measure CMB-01 (Further NO<sub>x</sub> Reductions from RECLAIM) which was submitted as a contingency measure only. This control measure is anticipated to be considered by the SCAQMD Board in the first half of 2015.

### **Potential Outcomes and Paths Forward**

Despite the 2015 attainment demonstration mentioned above, there remains considerable uncertainty in the PM<sub>2.5</sub> monitoring results for 2014 and the meteorological conditions and frequency of rainfall that will occur in 2015. In order to demonstrate attainment the 98<sup>th</sup> percentile of the 2015 24-hr PM<sub>2.5</sub> readings at Mira Loma has to be significantly below the standard of 35.4 ug/m<sup>3</sup> to compensate for high exceedances caused by the drought in 2013 and 2014, achieving a 3-year average design value at or below the standard. Although additional emissions reductions are expected in 2015, attainment of the standard, given the variability of weather conditions, remains far from certain. Acknowledging this uncertainty, there are several potential outcomes and pathways for the Basin's attainment status under the Clean Air Act depending on the actual certified air quality monitoring results for 2014 and 2015.

- 24-hour PM<sub>2.5</sub> data at Mira Loma for 2014 and 2015 is clean enough to attain the standard based on a three-year (2013-2015) average design value. The Basin could then be re-designated as attainment for this PM<sub>2.5</sub> standard
- The three-year average design value at Mira Loma does not show attainment in 2015, but the 98<sup>th</sup> percentile of the 24-hour PM<sub>2.5</sub> data at Mira Loma for the single year 2015 is below 35.4 µg/m<sup>3</sup>. Under CAA Subpart 4 provisions, if this air quality condition is met, and all PM<sub>2.5</sub> SIP commitments have been satisfied, then the Basin is eligible for a one-year attainment date extension to 2016. A second one-year extension to 2017, if the same conditions are met in 2016, is also possible.
- The three-year average design value at Mira Loma does not show attainment in 2015 and the 98<sup>th</sup> percentile of the 24-hour PM<sub>2.5</sub> data at Mira Loma for the single year 2015 is above 35.4 µg/m<sup>3</sup>. Under Subpart 4 of the CAA, upon U.S. EPA's determination that the Basin failed to attain the standard by the

attainment date, the Basin would be automatically reclassified from a “moderate” nonattainment area to a “serious” non-attainment area. The new attainment deadline would be 2019, and more stringent “serious” area requirements would apply, including requirements to implement Best Available Control Measures and a lower major source threshold (70 tons per year vs. the current 100 tons per year). A full analysis for implementation of these requirements and other control measures to ensure attainment as expeditiously as practicable would be included in the 2016 AQMP, which is also addressing the annual PM2.5 standard.

### **California Environmental Quality Act (CEQA)**

SCAQMD staff concludes that because the Supplement is not proposing to add new or delete any control measures that have the potential to have a direct or indirect adverse impact on the environment but merely presents updated analyses and other changes that do not have the potential to cause a direct or indirect adverse impact on the environment, the project is exempt under the requirements of CEQA, pursuant to CEQA Guidelines § 15061(b)(3).

### **Socioeconomic Analysis**

No socioeconomic impact assessment is required because the proposed amendments do not add or delete control measures from the previously adopted 2012 AQMP, therefore do not “significantly affect air quality or emissions limitations.” (Health & Safety Code Section 40440.8(a)).

### **Resource Impacts**

The action would be implemented using existing staff resources committed for the 2012 AQMP implementation and is not expected to impose any significant burden.

### **Attachments**

- A. Resolution
- B. Supplement to 24-hour PM2.5 State Implementation Plan (SIP) for South Coast Air Basin
- C. CEQA Notice of Exemption

## **ATTACHMENT A**

### **RESOLUTION**

**A Resolution of the South Coast Air Quality Management District Governing Board (SCAQMD) Governing Board approving the Supplement to the 24-hour PM2.5 State Implementation Plan (SIP) for the South Coast Air Basin and Submittal into the SIP.**

**A Resolution of the SCAQMD determining that the Supplement to the 24-hour PM2.5 SIP for the South Coast Air Basin is exempt from the requirements of the California Environmental Quality Act (CEQA).**

**WHEREAS**, the 2012 Air Quality Management Plan (AQMP) was designed to address the PM2.5 SIP requirements of the federal Clean Air Act for the South Coast Air Basin (Los Angeles County, Orange County, Riverside and San Bernardino County); and

**WHEREAS**, the 2012 AQMP was approved by the SCAQMD Governing Board in December 2012 and AQMP amendments approved in February 2013, then subsequently submitted to the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (U.S. EPA) for inclusion into the SIP; and

**WHEREAS**, due to a recent court decision, approval of the 24-hour PM2.5 portion of the 2012 AQMP is now subject to Clean Air Act (CAA) Subpart 4 requirements that provide for attainment of 2006 24-hour PM2.5 National Ambient Air Quality Standard (NAAQS) ( $35 \mu\text{g}/\text{m}^3$ ) by 2015, one year later than the attainment year in the 2012 AQMP; and

**WHEREAS**, the CAA Subpart 4 Section 189(e) necessitates that control requirements applicable for major PM2.5 sources shall also apply to major sources of PM2.5 precursors unless those sources do not contribute significantly to nonattainment; and

**WHEREAS**, the ambient air quality data suggests that meeting the 2006 24-hour PM2.5 NAAQS by the end of 2014 is not likely, largely due to unusually extreme drought conditions in the Basin; and

**WHEREAS**, the purpose of this Supplement to the 24-hour PM2.5 SIP for the South Coast Air Basin (Supplement) is to demonstrate attainment of the 2006 24-hour PM2.5 NAAQS by 2015 under CAA Subpart 4 as well as provide new transportation conformity budgets, updated analysis of Reasonably Available Control Measures (RACM)/ Reasonably Available Control Technology (RACT), updated control measure

commitments from those submitted in the 2012 AQMP, and demonstrate compliance with other Subpart 4 requirements; and

**WHEREAS**, the Supplement includes commitments for control measures that do not have quantified emission reductions but provide a strengthening of the SIP, such as measures for further study that do not contribute to the attainment demonstration and a measure designed to ensure emission reductions assumed to occur will in fact occur; and

**WHEREAS**, the SCAQMD staff concludes that the project is exempt from CEQA because the Supplement is not proposing to add new or delete any control measures that have the potential to have a direct or indirect adverse impact on the environment but merely presents updated analyses and other changes that do not have the potential to cause a direct or indirect adverse impact on the environment; and

**WHEREAS**, the SCAQMD Governing Board has determined that no socioeconomic impact will result from the Supplement; and

**WHEREAS**, public hearings in each affected county have been properly noticed by providing a 45-day notice in the newspapers in accordance with Health & Safety Code § 40466; and

**WHEREAS**, the SCAQMD Governing Board has held a final public hearing to consider approval of the Supplement in accordance with all provisions of law; and

**WHEREAS**, the SCAQMD specifies the manager of the Supplement as the custodian of the documents or other materials which constitute the record of proceedings upon which the approval is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California.

**NOW, THEREFORE, BE IT RESOLVED**, that the SCAQMD Governing Board does hereby determine that the Supplement to the 24-hour PM2.5 SIP for the South Coast Air Basin, Attachment B to the Board Letter, is exempt from the requirements of CEQA.

**BE IT FURTHER RESOLVED**, that the SCAQMD Governing Board does hereby approve, pursuant to the authority granted by law, the Supplement to the 24-hour PM2.5 SIP for the South Coast Air Basin, Attachment B to the Board Letter, and incorporated herein by this reference.

**BE IT FURTHER RESOLVED**, that the SCAQMD staff is hereby directed to take action in accordance with the updated 2012 SIP emission reduction commitments

to attain the 24-hour PM2.5 NAAQS listed in Table F-1 of Attachment F to the Supplement, and incorporated herein by this reference.

**BE IT FURTHER RESOLVED**, that the SCAQMD Executive Officer is hereby directed to forward a copy of this Resolution and Supplement to the 24-hour PM2.5 SIP for the South Coast Air Basin to CARB, and to request that these documents be forwarded to the U.S. EPA for approval as part of the California SIP. In addition, the SCAQMD Executive Officer is directed to forward any other information requested by the U.S. EPA for informational purposes.

Attachment

DATE: \_\_\_\_\_

\_\_\_\_\_  
CLERK OF THE BOARD

## ATTACHMENT B



### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## Draft Supplement to the 24-Hour PM<sub>2.5</sub> State Implementation Plan for the South Coast Air Basin

January 2015

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**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
GOVERNING BOARD**

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## **PREFACE**

A version of this Draft Supplement was made available at the SCAQMD Public Information Center on December 19, 2014 in accordance with the release of the noticing for the public hearings in February 2015 pursuant to the requirements of the Health & Safety Code § 40466. In response to comments and suggestions from the staff at U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), some additions and clarifications have been included in this January 2015 version of the Draft Supplement to be considered by the SCAQMD Governing Board for approval and submission into the 24-hour PM<sub>2.5</sub> State Implementation Plan (SIP) for the South Coast Air Basin at their February 6, 2015 Board Meeting.

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ATTACHMENT C – New Transportation Conformity Budgets for 2015

ATTACHMENT D – Updated RACM/RACT Analysis

ATTACHMENT E – ~~Demonstration of Compliance with~~ Clean Air Act, Subpart 4, Section  
189(e) and Other Precursor Requirements

ATTACHMENT F – Updated List of Control Strategy Commitments

## INTRODUCTION

The Federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (U.S. EPA) to develop and enforce regulations to protect the public from airborne contaminants known to be hazardous to human health. To do so, the U.S. EPA sets National Ambient Air Quality Standards (NAAQS) for “criteria” pollutants, such as particulate matter less than 2.5 microns (PM<sub>2.5</sub>), and designates areas in attainment or in non-attainment of the NAAQS. According to the CAA, if an area is designated non-attainment, the state is required to submit a State Implementation Plan (SIP) to demonstrate how and when the NAAQS will be achieved, maintained and enforced. The federal SIP requirements for the South Coast Air Basin (Basin) non-attainment area are addressed through Air Quality Management Plans (AQMP) prepared by the South Coast Air Quality Management District (SCAQMD) in collaboration with the California Air Resources Board (CARB) and the South California Association of Governments (SCAG). Required elements of the SIP include:

- Emission Inventory (CAA §172(c)(3))
- Attainment demonstration and modeling (CAA §172(a)(2)(A))
- All Reasonably Available Control Measures (RACT) including adoption of Reasonably Available Control Technology (RACT) (CAA § 172(c)(1))
- Demonstration of Reasonable Further Progress (CAA §172(c)(2))
- New Source Review Program(CAA §172(c)(4) and (5))
- Contingency measures (CAA §172(c)(9))
- Transportation Control Measures (CAA §108(e))

On December 17, 2006, the U.S. EPA lowered the 24-hour PM<sub>2.5</sub> NAAQS from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup> and the South Coast Air Basin was subsequently designated non-attainment for 2006 24-hour PM<sub>2.5</sub> NAAQS on December 14, 2009. U.S. EPA requires the SIP to be submitted no later than three years after the designation. To assist in the development of the SIPs to demonstrate attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS, the U.S. EPA issued implementation guidance in March of 2012.

The 2012 AQMP was approved by the SCAQMD Governing Board in December 2012, with additional amendments approved in February 2013, and was subsequently submitted to CARB and the U.S. EPA for inclusion into the SIP. That plan demonstrated projected attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS by 2014. However, a recent court decision (*Nat’l Res. Def. Council v. EPA*, 706 F.3d 428 (D.C. Cir. 2013)) compels U.S. EPA to evaluate the 24-hour PM<sub>2.5</sub> SIP under CAA Subpart 4 requirements specific to particulate matter, in addition to the general planning provisions of Subpart 1 that were previously used for PM<sub>2.5</sub> SIPs. Subpart 4 provides for an attainment year of 2015 for “moderate” areas, one year later than the attainment year in the 2012 AQMP. Furthermore, preliminary ambient air quality data suggests that

meeting the 2006 24-hour PM<sub>2.5</sub> NAAQS by the end of 2014 is not likely, largely due to unusually extreme drought conditions in the Basin. Therefore, the purpose of this Supplement to the 24-hour PM<sub>2.5</sub> SIP for the South Coast Air Basin is to demonstrate attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS by 2015 as allowed under CAA Subpart 4. In addition, the Supplement will update the transportation conformity budgets, RACM/RACT analysis, emission reduction commitments submitted in the 2012 AQMP, and other Subpart 4 requirements.

## **2012 AIR QUALITY MANAGEMENT PLAN**

The 2012 AQMP demonstrated attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS (35 µg/m<sup>3</sup>) with successful implementation of all feasible controls and assuming typical weather, demonstrated the earliest possible attainment date for the Basin was the end of 2014.

The 2012 AQMP included the items listed above but, more specifically, the following elements:

- Attainment demonstration of the 2006 24-hour PM<sub>2.5</sub> NAAQS for 2014;
- A RACM/RACT analysis;
- 2014 transportation conformity budgets; and
- Control strategy including emission reduction commitments with adoption and implementation dates

Since the Governing Board approval of the 2012 AQMP in December 2012 with amendments in February 2013, two PM<sub>2.5</sub> control measures, BCM-01 (Further Reductions from Residential Wood Burning Devices) and BCM-02 (Further Reductions from Open Burning), were adopted in the form of amendments to Rules 445 (Wood Burning Devices) and 444 (Open Burning), respectively. Together, these amendments generated a total of 11.7 tons of PM<sub>2.5</sub> per day reductions on an episodic basis. The attainment demonstration relies primarily on emissions reductions associated with revisions to Rules 444 and 445. Both of these rule revisions have been adopted by SCAQMD and approved by U.S. EPA. (78 FR 59249, September 26, 2013).

The only other emission reduction commitment in the 2012 PM<sub>2.5</sub> SIP was control measure CMB-01 (Further NO<sub>x</sub> Reductions from RECLAIM) which was submitted as a contingency measure only. This control measure is anticipated to be considered by the SCAQMD Governing Board in the first half of 2015. By implementing these control measures, the air quality modeling in the 2012 AQMP demonstrated attainment of the 2006 PM<sub>2.5</sub> standard in 2014. However, as discussed later, unanticipated extreme weather conditions have affected air quality making attainment in 2014 unlikely.

## U.S. EPA IMPLEMENTATION GUIDANCE FOR THE 2006 24-HOUR PM<sub>2.5</sub> NAAQS

In March of 2012, U.S. EPA issued a memorandum to provide guidance regarding the development of SIPs required to demonstrate attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS. The guidance included a section regarding “overall framework” based on CAA Subpart 1 for general nonattainment plan provisions, specifically section 172(a)(2)(A) that requires plans to demonstrate attainment “as expeditiously as practicable but no later than five years from the date such area was designated nonattainment.

The U.S. EPA’s previous PM<sub>2.5</sub> Implementation Rules and Guidance were challenged, partly because they were based on general implementation provisions under Subpart 1 of the CAA rather than the ~~particulate matter~~ PM<sub>10</sub> specific provision of Subpart 4 of the CAA. In January 2013, the U.S. Court of Appeals (*Nat’l Res. Def. Council v. EPA*, 706 F.3d 428 (D.C. Cir. 2013)) decided that the U.S. EPA misinterpreted the CAA relative to the statutory requirements for the 1997 PM<sub>2.5</sub> standards, erred in applying the provisions of Subpart 1 rather than Subpart 4, and needs to re-promulgate the PM<sub>2.5</sub> implementation rules with Subpart 4. On June 6, 2013, U.S. EPA withdrew the March 2012 Implementation Guidance for 2006 24-hour PM<sub>2.5</sub> NAAQS.

### CLEAN AIR ACT, TITLE 1, PART D, SUBPART 4

Title 1, Part D of the CAA outlines the plan requirements for nonattainment areas and is divided into six subparts. Subpart 1 provides general provisions for nonattainment areas; Subpart 2 through 4 include, respectively, additional provisions for ozone, carbon monoxide and particulate matter nonattainment areas. Subpart 5 consists of additional provisions for areas designated nonattainment for sulfur oxide, nitrogen dioxide or lead. Finally, Subpart 6 lists a general savings clause.

Provisions in Subpart 4 are based on the classification of the nonattainment region as moderate or serious. The South Coast Air Basin ~~is considered~~ has been classified by U.S. EPA as moderate nonattainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS. For a moderate area, “the attainment date shall be, as expeditiously as practicable, but no later than the end of the sixth calendar year after the areas designation as nonattainment.” (*CAA, Title 1, Part D, Subpart 4, Section 188(c)(1)*) As discussed earlier, the South Coast Air Basin designation as non-attainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS (35 µg/m<sup>3</sup>) was effective December 14, 2009, thus providing for a latest attainment date of December 31, 2015. Subpart 4 provisions also allows for no more than 2 one-year extensions of the attainment date for a “moderate” area as long as all SIP commitments are met and if the previous single year’s air quality shows attainment (*Section 188 (d)*). Finally, Subpart 4 Section 189(e) necessitates that control requirements applicable for major PM<sub>2.5</sub>

sources shall also apply to major sources of PM<sub>2.5</sub> precursors unless U.S. EPA finds that major sources do not significantly contribute to nonattainment. PM<sub>2.5</sub> has four major precursors, other than direct PM<sub>2.5</sub> emissions, that contribute to the development of the ambient PM<sub>2.5</sub>: ammonia, nitrogen oxide (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), and volatile organic compounds (VOC).

## AIR QUALITY MONITORING DATA

Preliminary air quality monitoring data indicates that attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS (35 µg/m<sup>3</sup>) is not likely to be achieved by the end of 2014. It should be noted that U.S. EPA has proposed to find that the former 24-hour PM<sub>2.5</sub> NAAQS (65 µg/m<sup>3</sup>) has been attained, along with the previous annual PM<sub>2.5</sub> NAAQS of 15 µg/m<sup>3</sup> (79, FR, 72999, Dec 9, 2014). Attainment of the 2012 annual PM<sub>2.5</sub> NAAQS of 12 µg/m<sup>3</sup> will be addressed in the upcoming 2016 AQMP.

With regard to the air quality monitoring, only the Mira Loma location in Western Riverside County exceeds the 2006 24-hour PM<sub>2.5</sub> NAAQS. Attainment of the PM<sub>2.5</sub> standard is based on a “design value” equal to the 3-year average of the annual 98<sup>th</sup> percentile concentration with prescribed rounding conventions. In the case of the 2006 24-hour PM<sub>2.5</sub> NAAQS, attainment is achieved if this design value is less than 35.4 µg/m<sup>3</sup>. Preliminary data through June 2014 shows a 98<sup>th</sup> percentile PM<sub>2.5</sub> concentration in 2014 is 35 µg/m<sup>3</sup>. However, including the 98<sup>th</sup> percentiles of the preceding two years as shown below, the design value at Mira Loma will likely exceed the standard. Note that the data for 2014 is preliminary, and that it does not include the November and December months of 2014 when exceedances have historically been observed.

|                        |                         |
|------------------------|-------------------------|
| <b>2012:</b>           | 35.8 µg/m <sup>3</sup>  |
| <b>2013:</b>           | 37.5 µg/m <sup>3</sup>  |
| <b>2014:</b>           | 35.0+ µg/m <sup>3</sup> |
| <b>3-Year Average:</b> | > 36 µg/m <sup>3</sup>  |

Thus, according to this data, attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS (35 µg/m<sup>3</sup>) will not be achieved by the end of 2014 as anticipated in the 2012 AQMP. As discussed below, the higher levels in 2013 and possibly 2014, which reverse a long term trend of improving PM<sub>2.5</sub> concentrations, were affected by extreme drought conditions in Southern California.

## SUPPLEMENT TO THE 24-HOUR PM<sub>2.5</sub> SIP

In close consultation with U.S. EPA and CARB, the SCAQMD is proposing to supplement the previous 24-hour PM<sub>2.5</sub> SIP submittal to address Subpart 4 provisions and requirements with the following elements that are included in this Supplement:

- Demonstration of attainment of the 24-hour PM<sub>2.5</sub> NAAQS by 2015;
- Discussion of the effects of the drought on the 2014 attainment date;
- Provide new transportation conformity budgets for 2015;
- Updated RACM/RACT analysis;
- Demonstration of compliance with CAA Subpart 4, Section 189(e) that applies to major source PM<sub>2.5</sub> precursors, such as VOC and ammonia unless U.S. EPA finds these sources do not significantly contribute to nonattainment; and
- Updated list of control strategy commitments.

Upon adoption by the SCAQMD Governing Board, the Supplement will be submitted to CARB and subsequently to the U.S. EPA for inclusion into the SIP.

### 2015 ATTAINMENT DEMONSTRATION

The 2012 AQMP provided attainment projections for years 2014 and 2019 with the implementation of all feasible control measures. To show attainment of the 2006 24-hour PM<sub>2.5</sub> NAAQS by 2015 as allowed under Subpart 4, the 2012 AQMP inventories and modeling results will be used in an interpolation analysis between the 2014 and 2019 projections. This demonstration can be found in Attachment A that also includes a discussion based on the emissions inventory and inter-pollutant weighting factors.

### EFFECTS OF THE DROUGHT

Attachment B includes a weight-of-evidence discussion on the lack of rainfall and drought conditions in the South Coast Air Basin for the past two years, and how that has impacted the PM<sub>2.5</sub> ambient levels. Limited rain means there is less crusting and wetting of soil and road surfaces. Thus, more road dust and fugitive dust emissions are generated. A reduced frequency of storms translates to fewer days of enhanced pollution dispersion. Without such dispersion, there is no deep mixing of the atmosphere, particulate matter captured by raindrops or wind to transport the pollution away from the region. Finally, Attachment B will include a discussion of the impact of a continued drought on the 2015 attainment demonstration. Given the weather conditions and ambient data in 2013 and 2014, the earliest practicable attainment date for the 24-hour PM<sub>2.5</sub> NAAQS is 2015.

## **PATHS FORWARD**

Despite the attainment demonstration mentioned above, there remains considerable uncertainty in the PM<sub>2.5</sub> monitoring results for 2014 and the meteorological conditions and frequency of rainfall that will occur in 2015. In order to demonstrate attainment the 98<sup>th</sup> percentile of the 2015 24-hr PM<sub>2.5</sub> readings at Mira Loma has to be significantly below the standard of 35.4 ug/m<sup>3</sup> to compensate for high exceedances caused by the drought in 2013 and 2014, achieving a 3-year average design value at or below the standard. Although additional emissions reductions are expected in 2015, attainment of the standard, given the variability of weather conditions, remains far from certain. Acknowledging this uncertainty, there are several potential outcomes and pathways for the Basin's attainment status under the Clean Air Act depending on the actual certified air quality monitoring results for 2014 and 2015.

- 24-hour PM<sub>2.5</sub> data at Mira Loma for 2014 and 2015 is clean enough to attain the standard based on a three-year (2013-2015) average design value. The Basin could then be re-designated as attainment for this PM<sub>2.5</sub> standard
- The three-year average design value at Mira Loma does not show attainment in 2015, but the 98<sup>th</sup> percentile of the 24-hour PM<sub>2.5</sub> data at Mira Loma for the single year 2015 is below 35.4 µg/m<sup>3</sup>. Under CAA Subpart 4 provisions, if this air quality condition is met, and all PM<sub>2.5</sub> SIP commitments have been satisfied, then the Basin is eligible for a one-year attainment date extension to 2016. A second one-year extension to 2017, if the same conditions are met in 2016, is also possible.
- The three-year average design value at Mira Loma does not show attainment in 2015 and the 98<sup>th</sup> percentile of the 24-hour PM<sub>2.5</sub> data at Mira Loma for the single year 2015 is above 35.4 µg/m<sup>3</sup>. Under Subpart 4 of the CAA, upon U.S. EPA's determination that the Basin failed to attain the standard by the attainment date, the Basin would be automatically reclassified from a "moderate" nonattainment area to a "serious" non-attainment area. The new attainment deadline would be 2019, and more stringent "serious" area requirements would apply, including requirements to implement Best Available Control Measures (BACM) and a lower major source threshold (70 tons per year vs. the current 100 tons per year). A full analysis for implementation of these requirements and other control measures to ensure attainment as expeditiously as practicable would be included in the 2016 AQMP, which is also addressing the annual 2012 PM<sub>2.5</sub> standard.

## 2015 TRANSPORTATION CONFORMITY BUDGETS

Attachment C includes new transportation conformity budgets based on the interpolated 2015 vehicle miles traveled (VMT) used for the attainment demonstration.

## RACM/RACT ANALYSIS

A RACM demonstration, including a RACT analysis, was submitted to U.S. EPA as component of 2012 AQMP. Updates to the RACM/RACT analysis, which addresses direct PM<sub>2.5</sub> and precursor emissions, can be found in Attachment D.

## **DEMONSTRATION OF COMPLIANCE WITH CAA SUBPART 4, SECTION 189(e) AND OTHER PRECURSOR REQUIREMENTS**

CAA Subpart 4, Section 189(e) addresses control requirements for major stationary sources of PM<sub>2.5</sub> precursors, such as VOC and ammonia. The sections states, “the control requirements applicable under plans in effect under this part for major stationary sources of PM<sub>10</sub> shall also apply to major stationary sources of PM<sub>10</sub> precursors, except where the Administrator determines that such sources do not contribute significantly to PM<sub>10</sub> levels which exceed the standard in the area.” SCAQMD staff’s analysis (*see Attachment E*) shows that VOC and ammonia from major sources (100 tons per year or greater) do “not contribute significantly” to overall emissions and thus ambient PM<sub>2.5</sub> levels. Furthermore, both VOC and ammonia are subject to requirements for Best Available Control Technology (BACT) under existing New Source Review at a zero threshold, so those emission will still be minimized. VOC emissions are also required to be offset when a new or modified source will emit four tons per year or more of VOC, well below the level at which the PM<sub>2.5</sub> requirement would require offsets. So, the only practical difference between the existing control program for New Source Review and a program that expressly applies to VOC and ammonia as PM<sub>2.5</sub> precursors is that any new or modified source of 100 tons per year or more of ammonia will not need offsets. As explained Attachment E, it is extremely unlikely that there would be a new stationary source of 100 tons per year of ammonia anywhere in the Basin. Moreover, the SCAQMD has adopted numerous rules limiting VOCs, continually seeking all feasible reductions, as part of the stringent ozone control program. Thus, the SCAQMD believes the requirements of CAA Subpart 4, Section 189(e) and other precursor requirements are satisfied and thus request that the Administrator of U.S. EPA makes this determination.

## CONTROL STRATEGY COMMITMENTS

Attachment F provides an updated list of control strategy commitments originally proposed in the 2012 AQMP in Chapter 4 (Control Strategy and Implementation).

## **ATTACHMENT A**

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### **ATTAINMENT DEMONSTRATION OF THE 24-HOUR PM<sub>2.5</sub> NATIONAL AMBIENT AIR QUALITY STANDARD FOR 2015**

## **BACKGROUND**

The 2012 AQMP provided a comprehensive attainment demonstration for the 2006 24-hour PM<sub>2.5</sub> NAAQS (35 µg/m<sup>3</sup>) in 2014 for the South Coast Air Basin (Basin). The analysis which is presented in Chapter 5 of the AQMP main document and Appendix V provides a detailed discussion of the modeling analysis including modeling platforms (both meteorological and dispersion), chemical modules, model parameterization, emissions, background concentrations, base year performance and future year baseline and controlled PM<sub>2.5</sub> projections. The attainment demonstration was anchored using the 2008 base year AQMP inventory and future year projections based on regional growth factors provided by the Southern California Association of Governments. The analysis followed U.S. EPA modeling guidance in simulating the speciated 98<sup>th</sup> percentile 24-hour PM<sub>2.5</sub> levels for the 2014 baseline and controlled emissions scenarios as well as the 2019, 2023 and 2030 controlled scenarios. The NWS WRF meteorological model and the CMAQ dispersion model coupled with SAPRC99 chemistry were the primary modeling tools employed in the analyses. Boundary conditions were developed from GEOS-Chem global simulation model output. Simulations were conducted for gridded domain encompassing the majority of Southern California, northern Baja Mexico and the eastern Pacific Ocean.

The analysis demonstrated attainment of the 24-hour standard in 2014 for the controlled emissions based on the application of simulation determined, particulate species specific, relative reduction factors (RRF) applied to a 5-year weighted speciated 2008 design value. The demonstration showed attainment in 2014 at the Mira Loma Basin design site for the controlled emissions with a predicted design concentration of 34.3 µg/m<sup>3</sup>. Subsequent simulations for controlled emissions indicated that the standard would be met with a 2019 design value of 35.4 µg/m<sup>3</sup> decreasing to 33.7 µg/m<sup>3</sup> in 2023 and 33.4 µg/m<sup>3</sup> by 2030. (The threshold design value for demonstrating attainment to the standard for model simulations is set at 35.4 µg/m<sup>3</sup> based on established rounding conventions). The demonstration provided future year controlled emissions projections of 24-hr PM<sub>2.5</sub> design values for six additional monitoring locations including Rubidoux, the former Basin design site, Fontana – an area heavily impacted by local industry including warehouse distribution centers, Central Los Angeles, South Long Beach and North Long Beach – areas impacted by goods movement related emissions sources, and Anaheim representing urban residential impacts. Finally the demonstration also included an unmonitored area analysis to confirm that all PM<sub>2.5</sub> impact areas were being fully assessed in the analysis.

## **DROUGHT IMPACT ON AIR QUALITY**

The west coast of the U.S. has experienced a severe drought for the past several years with 2013 annual rainfall total measured at Downtown Los Angeles of 3.6 inches, far below the 14.9 inch long term average. Rainfall events of 0.01 inches of rain or more were 25 percent lower than the average of 28 days typically occurring during the 1<sup>st</sup> and 4<sup>th</sup> quarters of the year. Under the

drought conditions, Mira Loma 24-hr PM<sub>2.5</sub> 98<sup>th</sup> percentile concentrations experienced a reversal in the long-term trend of declining concentrations rising from a 2012 value of 35.1 µg/m<sup>3</sup> to 37.5 µg/m<sup>3</sup> in 2013. Based on a conservative analysis of the impact of rain fall events on the 98<sup>th</sup> percentile concentration, the drought accounted for roughly 1.6 µg/m<sup>3</sup> additional mass to the observed 98<sup>th</sup> percentile concentration. (A discussion of the rain event-concentration impact is provided in Attachment B). It is anticipated that the 2014 Basin 24-hr PM<sub>2.5</sub> design value (measured at Mira Loma) based on the 2012-2014 3-year average of the 98<sup>th</sup> percentile concentration will exceed 35.4 µg/m<sup>3</sup> due to the observed continuation of the drought.

## **ANALYSIS UPDATE**

An update of the 2012 24-hour PM<sub>2.5</sub> attainment demonstration has been conducted to show attainment of the NAAQS for the year 2015, based on a 2015 controlled emissions inventory. The analysis uses the 2014 and 2019 projected design values using the controlled emissions to calculate the 2015 expected design. The 2015 design value was calculated using linear interpolation by component species between the two milestone years. In addition, the analysis includes an update to the unmonitored area attainment demonstration.

To corroborate the interpolation based attainment demonstration, an analysis is provided to assess the impact to the 2014 design value resulting from changes in the projected controlled emissions inventory from 2014 to 2015 using emissions (tons per day) to species projected PM<sub>2.5</sub> concentrations ratios.

## **2015 24-HR PM<sub>2.5</sub> ATTAINMENT DEMONSTRATION**

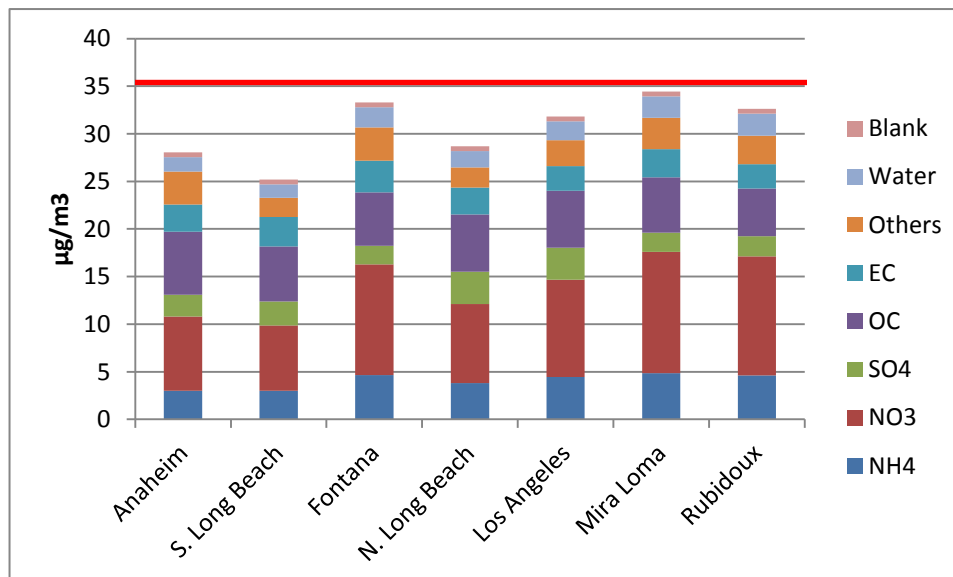
Table A-1 summarizes the site specific 2015 24-Hr PM<sub>2.5</sub> attainment demonstration. The maximum concentration for the Basin is projected to continue to occur at the Mira Loma monitoring site with an expected design value of 34.5 µg/m<sup>3</sup>. Figure A-1 illustrates the 2015 predicted design values by component species. The largest contribution to the 2015 design value is nitrate followed by organic carbon. Table A-2 provides the corresponding 2014 and 2019 projected design values for the seven stations analyzed in the interpolation analysis.

Appendix V of the 2012 AQMP provided a comprehensive unmonitored area analysis that demonstrates that all grid cells covered by the regional modeling simulation were predicted to have 2014 design concentrations meeting the 24-Hr PM<sub>2.5</sub> 35 µg/m<sup>3</sup> standard. The projected average change in design concentration between 2014 and 2015 is estimated to be a 0.2 µg/m<sup>3</sup> increase in PM<sub>2.5</sub> but this will not result in a change in the attainment demonstration in 2015. A corresponding 0.2 µg/m<sup>3</sup> increase was added to the concentration in cell (89,58), the cell with the peak unmonitored area design concentration. The resulting design concentration of 31.4 µg/m<sup>3</sup> for 2015 meets the unmonitored area attainment test. Table A-3 summarizes the projected change in predicted particulate component species for the seven sites.

**TABLE A-1**

**2015 24-Hr PM<sub>2.5</sub> Attainment Demonstration**

| Station       | Predicted Mass ( $\mu\text{g}/\text{m}^3$ ) |
|---------------|---------------------------------------------|
| Anaheim       | 27.0                                        |
| S. Long Beach | 25.0                                        |
| Fontana       | 33.1                                        |
| N. Long Beach | 28.7                                        |
| Los Angeles   | 31.8                                        |
| Mira Loma     | 34.5                                        |
| Rubidoux      | 32.5                                        |



**FIGURE A-1**

**2015 24-Hr PM<sub>2.5</sub> Predicted Component Species Design Concentrations**  
 (The red band at 3g micrograms per cubic meter depicts the Federal Standard)

**KEY:**

EC = elemental carbon  
 OC = organic carbon  
 SO<sub>4</sub> = sulfate  
 NO<sub>3</sub> = nitrate  
 NH<sub>4</sub> = ammonium  
 Others = crustal metals

**TABLE A-2**  
**Component Interpolated 24-Hour Average PM2.5 2015 Attainment Demonstration**

| YEAR          | NH4         | NO3          | SO4         | OC          | EC          | Others      | Water       | Blank      | Mass        |
|---------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
| Anaheim       |             |              |             |             |             |             |             |            |             |
| 2014          | 2.9         | 7.5          | 2.2         | 6.6         | 2.8         | 3.5         | 1.5         | 0.5        | 27.5        |
| <b>2015</b>   | <b>3.02</b> | <b>7.78</b>  | <b>2.28</b> | <b>6.62</b> | <b>2.86</b> | <b>3.46</b> | <b>1.54</b> | <b>0.5</b> | <b>28.0</b> |
| 2019          | 3.5         | 8.9          | 2.6         | 6.7         | 3.1         | 3.3         | 1.7         | 0.5        | 30.2        |
|               |             |              |             |             |             |             |             |            |             |
| S. Long Beach |             |              |             |             |             |             |             |            |             |
| 2014          | 3           | 6.9          | 2.5         | 5.6         | 3.1         | 2           | 1.4         | 0.5        | 24.8        |
| <b>2015</b>   | <b>3</b>    | <b>6.88</b>  | <b>2.52</b> | <b>5.76</b> | <b>3.1</b>  | <b>2.02</b> | <b>1.42</b> | <b>0.5</b> | <b>25.0</b> |
| 2019          | 3           | 6.8          | 2.6         | 6.4         | 3.1         | 2.1         | 1.5         | 0.5        | 25.9        |
|               |             |              |             |             |             |             |             |            |             |
| Fontana       |             |              |             |             |             |             |             |            |             |
| 2014          | 4.7         | 11.8         | 1.9         | 5.3         | 3.3         | 3.5         | 2.1         | 0.5        | 32.9        |
| <b>2015</b>   | <b>4.64</b> | <b>11.66</b> | <b>1.92</b> | <b>5.64</b> | <b>3.32</b> | <b>3.5</b>  | <b>2.1</b>  | <b>0.5</b> | <b>33.1</b> |
| 2019          | 4.4         | 11.1         | 2           | 7           | 3.4         | 3.5         | 2.1         | 0.5        | 33.9        |
|               |             |              |             |             |             |             |             |            |             |
| N. Long Beach |             |              |             |             |             |             |             |            |             |
| 2014          | 3.8         | 8.2          | 3.4         | 5.8         | 2.8         | 2.1         | 1.7         | 0.5        | 28.3        |
| <b>2015</b>   | <b>3.82</b> | <b>8.28</b>  | <b>3.4</b>  | <b>6.04</b> | <b>2.82</b> | <b>2.12</b> | <b>1.72</b> | <b>0.5</b> | <b>28.7</b> |
| 2019          | 3.9         | 8.6          | 3.4         | 7           | 2.9         | 2.2         | 1.8         | 0.5        | 30.3        |
|               |             |              |             |             |             |             |             |            |             |
| Los Angeles   |             |              |             |             |             |             |             |            |             |
| 2014          | 4.6         | 10.5         | 3.3         | 5.6         | 2.7         | 2.6         | 2           | 0.5        | 31.8        |
| <b>2015</b>   | <b>4.46</b> | <b>10.2</b>  | <b>3.36</b> | <b>5.98</b> | <b>2.62</b> | <b>2.72</b> | <b>1.98</b> | <b>0.5</b> | <b>31.8</b> |
| 2019          | 3.9         | 9            | 3.6         | 7.5         | 2.3         | 3.2         | 1.9         | 0.5        | 31.9        |
|               |             |              |             |             |             |             |             |            |             |
| Mira Loma     |             |              |             |             |             |             |             |            |             |
| 2014          | 4.9         | 12.8         | 2           | 5.6         | 2.9         | 3.2         | 2.3         | 0.5        | 34.3        |
| <b>2015</b>   | <b>4.86</b> | <b>12.72</b> | <b>2.02</b> | <b>5.84</b> | <b>2.96</b> | <b>3.28</b> | <b>2.26</b> | <b>0.5</b> | <b>34.5</b> |
| 2019          | 4.7         | 12.4         | 2.1         | 6.8         | 3.2         | 3.6         | 2.1         | 0.5        | 35.4        |
|               |             |              |             |             |             |             |             |            |             |
| Rubidoux      |             |              |             |             |             |             |             |            |             |
| 2014          | 4.7         | 13           | 2           | 4.7         | 2.5         | 2.8         | 2.4         | 0.5        | 32.5        |
| <b>2015</b>   | <b>4.62</b> | <b>12.52</b> | <b>2.1</b>  | <b>5.02</b> | <b>2.56</b> | <b>2.98</b> | <b>2.32</b> | <b>0.5</b> | <b>32.5</b> |
| 2019          | 4.3         | 10.6         | 2.5         | 6.3         | 2.8         | 3.7         | 2           | 0.5        | 32.5        |

**TABLE A-3****Average Interpolated Change in Component Species Concentrations from 2014 to 2015  
( $\mu\text{g}/\text{m}^3$ )**

| Station        | NH <sub>4</sub> | NO <sub>3</sub> | SO <sub>4</sub> | OC         | EC         | Others     | Water      | Blank      | Mass       |
|----------------|-----------------|-----------------|-----------------|------------|------------|------------|------------|------------|------------|
| Anaheim        | 0.1             | 0.3             | 0.1             | 0.0        | 0.1        | 0.0        | 0.0        | 0.0        | 0.5        |
| S. Long Beach  | 0.0             | 0.0             | 0.0             | 0.2        | 0.0        | 0.0        | 0.0        | 0.0        | 0.2        |
| Fontana        | -0.1            | -0.1            | 0.0             | 0.3        | 0.0        | 0.0        | 0.0        | 0.0        | 0.2        |
| N. Long Beach  | 0.0             | 0.1             | 0.0             | 0.2        | 0.0        | 0.0        | 0.0        | 0.0        | 0.4        |
| Los Angeles    | -0.1            | -0.3            | 0.1             | 0.4        | -0.1       | 0.1        | 0.0        | 0.0        | 0.0        |
| Mira Loma      | 0.0             | -0.1            | 0.0             | 0.2        | 0.1        | 0.1        | 0.0        | 0.0        | 0.2        |
| Rubidoux       | -0.1            | -0.5            | 0.1             | 0.3        | 0.1        | 0.2        | -0.1       | 0.0        | 0.0        |
| <b>Average</b> | <b>0.0</b>      | <b>-0.1</b>     | <b>0.0</b>      | <b>0.2</b> | <b>0.0</b> | <b>0.1</b> | <b>0.0</b> | <b>0.0</b> | <b>0.2</b> |

**EMISSIONS INVENTORY APPROACH**

Table A-4 presents the 2015 interpolated Basin total emissions inventory and the change from the 2014 projection. Both VOC and NO<sub>x</sub> emissions are projected to be lower by 7.9 and 17.8 TPD respectively in 2015. Little change was projected in SO<sub>x</sub> emissions and directly emitted particulate emissions are estimated to grow at a nominal rate of 0.1 tons per day. The 2012 AQMP provided a set of estimated emissions (TPD) to particulate formation potential ( $\mu\text{g}/\text{m}^3$ ) ratios for VOC, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>2.5</sub> to secondary organic carbon, nitrate, sulfate and the combination of primary organic compound, elemental carbon and others. The ratios can provide an estimate of the relative contribution of emissions to particulate formation and be used to roughly estimate the magnitude of change in particulate expected from changes in the emissions inventory. Please note that the ratios were calculated specifically for a 2014 inventory; they are used here to estimate the magnitude of the expected net change in the 2015 PM<sub>2.5</sub> particulate concentrations from 2014. These estimates are compared to the average change in component species concentrations (listed in Table A-2) where nitrates and sulfates are calculated to incorporate ammonium and bonded water.

As shown in Table A-4, the projected change in baseline emissions from 2014 to 2015 is estimated to result in 0.3  $\mu\text{g}/\text{m}^3$  reduction in regional nitrate and a small increase in primary PM<sub>2.5</sub>. The average projected changes in the 2015 attainment demonstration from the interpolation analysis show a comparable reduction in nitrate, a nominal increase (0.1  $\mu\text{g}/\text{m}^3$ ) in sulfate and a larger 0.2  $\mu\text{g}/\text{m}^3$  increase in primary PM<sub>2.5</sub>. While the estimates do not exactly match, the magnitude of the change and the direction (increase or decrease) for the key components is aligned. This indicates that the interpolated PM<sub>2.5</sub> attainment demonstration is consistent with the projected change in emissions.

**TABLE A-4****Average Interpolated Change in Component Species Concentrations from 2014 to 2015  
( $\mu\text{g}/\text{m}^3$ )**

|                                                                                                          | <b>VOC<br/>(TPD)</b>                    | <b>NOX<br/>(TPD)</b> | <b>SOX<br/>(TPD)</b> | <b>PM<sub>2.5</sub><br/>(TPD)</b>                                             |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------|----------------------|-------------------------------------------------------------------------------|
| 2014 Controlled Emissions                                                                                | 451.1                                   | 506.0                | 18.4                 | 69.9                                                                          |
| 2015 Interpolated Controlled Emissions                                                                   | 443.2                                   | 488.2                | 18.4                 | 70.0                                                                          |
| TPD Change: 2014-2015                                                                                    | <b>-7.9</b>                             | <b>-17.8</b>         | <b>0</b>             | <b>+0.1</b>                                                                   |
|                                                                                                          | <b>SECONDARY<br/>ORGANIC<br/>CARBON</b> | <b>NITRATE</b>       | <b>SULFATE</b>       | <b>PRIMARY<br/>ORGANIC<br/>CARBON +<br/>ELEMENTAL<br/>CARBON +<br/>OTHERS</b> |
| Per Ton Conversion Factors:<br>PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ ) /TPD                       | 0.004                                   | 0.014                | 0.111                | 0.2132                                                                        |
| 2014-2015 Emissions Inventory<br>Projected Change in PM <sub>2.5</sub><br>( $\mu\text{g}/\text{m}^3$ )   | 0.0                                     | -0.3                 | 0                    | 0.02                                                                          |
| Average Simulated Change in<br>PM <sub>2.5</sub> Concentration ( $\mu\text{g}/\text{m}^3$ )<br>2014-2105 | 0.0                                     | -0.1                 | 0.1                  | 0.2                                                                           |

**SUMMARY**

The revised analysis demonstrates attainment of the 24-hour PM<sub>2.5</sub> standard in the Basin, including unmonitored areas, by 2015 using interpolation techniques supported by projected emissions. However, there remains considerable uncertainty in the meteorological conditions and frequency of rainfall that will occur in 2015. In order to demonstrate attainment the 98<sup>th</sup> percentile of the 2015 24-hr PM<sub>2.5</sub> readings at Mira Loma has to be significantly below the standard of 35.4  $\mu\text{g}/\text{m}^3$  to compensate for high exceedances caused by the drought in 2013 and 2014, achieving a 3-year average design value at or below the standard. Although additional emissions reductions are expected in 2015, attainment of the standard, given the variability of weather conditions, remains far from certain.

~~The revised analysis shows that the Basin will be in attainment of the 24-hour PM<sub>2.5</sub> standard in 2015 with a maximum concentration of 34.5  $\mu\text{g}/\text{m}^3$ . The analysis confirms that the unmonitored area analysis will also demonstrate attainment in 2015. The projected 2015 change in emissions accounts for a nominal decrease in ammonium nitrate and a limited increase in the particulate component concentrations. While the absolute concentration change is lower than the~~

~~interpolation modeled concentration, the directional response is consistent with nitrates being lower and particulates nominally increasing.~~

## **REFERENCES**

1. South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, Diamond Bar, CA., February 2013.
2. South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, Appendix V, Modeling Attainment Demonstrations, Diamond Bar, CA., February 2013.

## **ATTACHMENT B**

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### **EFFECTS OF THE DROUGHT**

## **BACKGROUND**

The 2014 attainment demonstration was based on simulated RRFs applied to a weighted 2008 design value. The 5-year weighted PM<sub>2.5</sub> design value incorporated 98<sup>th</sup> percentile concentrations from 2006 through 2010. The five year period used for the design calculation covered a meteorological period, when assessed for the frequency of rainfall events and precipitation accumulations, was essentially average compared to the long term (50+ year) statistics. As a consequence, the 2014 projected 24-hour PM<sub>2.5</sub> design value for Mira Loma assumed a similar window of average precipitation events and rainfall totals with the concurrent natural pollution dispersion potential associated with the unstable weather.

Unfortunately, the west coast of the U.S. has experienced a severe drought for the past several years with 2013 annual rainfall total measured at Downtown Los Angeles of 3.6 inches, far below the 14.9 inch long term average. Rainfall events of 0.01 inches of rain or more were 25 percent lower than the average of 28 days typically occurring during the 1<sup>st</sup> and 4<sup>th</sup> quarters of the year. Under the drought conditions, Mira Loma 24-hr PM<sub>2.5</sub> 98<sup>th</sup> percentile concentrations experienced a reversal in the long-term trend of declining concentrations rising from a 2012 value of 35.1 µg/m<sup>3</sup> to 37.5 µg/m<sup>3</sup> in 2013. Based on a conservative analysis of the impact of rain fall events on the 98<sup>th</sup> percentile concentration, the drought accounted for roughly 1.6 µg/m<sup>3</sup> to the observed 98<sup>th</sup> percentile concentration. (A discussion of the rain event-concentration impact is provided in the weight of evidence discussion).

Through October, the drought has continued and only 8 rain days have been observed at Downtown Los Angeles in 2014. More specifically, no rain fell in January with only two days of minor precipitation in February before the 26<sup>th</sup>. Note that historically the majority of exceedances of the standard occur between November and February. Concurrently, the preliminary un-validated observed 98<sup>th</sup> percentile concentration at Mira Loma was measured at 35 µg/m<sup>3</sup> through June. Given that the 4<sup>th</sup> quarter has the potential for higher PM<sub>2.5</sub> concentrations, it is anticipated that the 2014 Basin 24-hr PM<sub>2.5</sub> design value (measured at Mira Loma) based on the 2012-2014 3-year average of the 98<sup>th</sup> percentile concentration will exceed 35.4 µg/m<sup>3</sup>.

The focus of this discussion is to address the impact of the drought on the 24-hour PM<sub>2.5</sub> attainment by first developing a methodology to correct for variations in rainfall frequency then applying that methodology to the trend of ambient PM<sub>2.5</sub> to determine the likelihood for future compliance.

## **ACCOUNTING FOR SEASONAL VARIATIONS IN RAINFALL FREQUENCY**

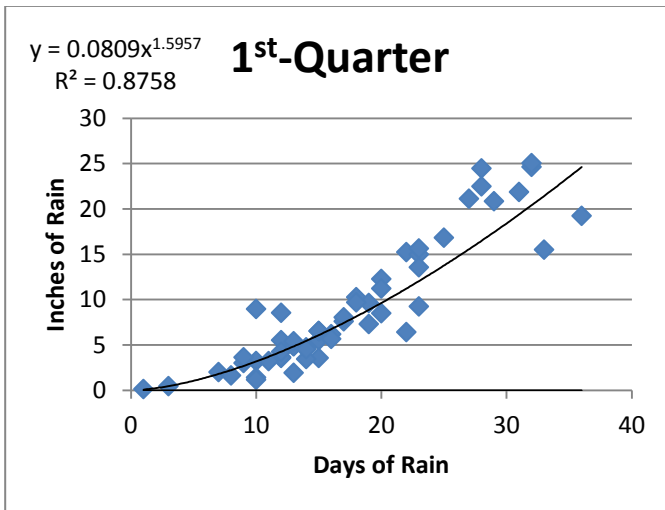
As described above, the West Coast of the U.S. has been impacted by a multiple year drought that has reduced the frequency of rain events and increased the likelihood for atmospheric stagnation. A question has arisen as to what would be the impact to the 2015 attainment demonstration if the drought continues beyond 2014. To assess this potential situation, an algorithm was generated to adjust the predicted annual PM<sub>2.5</sub> 98<sup>th</sup> percentile concentration based on the deviation from the average expected rain frequency. The form of the adjustment was based on the rainfall correction applied to fugitive dust in U.S. EPA AP-42 and is presented through the following equation:

$$\text{Rain Frequency Factor (RFF)} = 1 + \left[ \frac{(\text{Q-1 Exp} + \text{Q-4 Exp}) - (\text{Q-1 Obs} + \text{Q-4 Obs})}{182 - (\text{Q-1 Obs} + \text{Q-4 Obs})} \right]$$

Where:

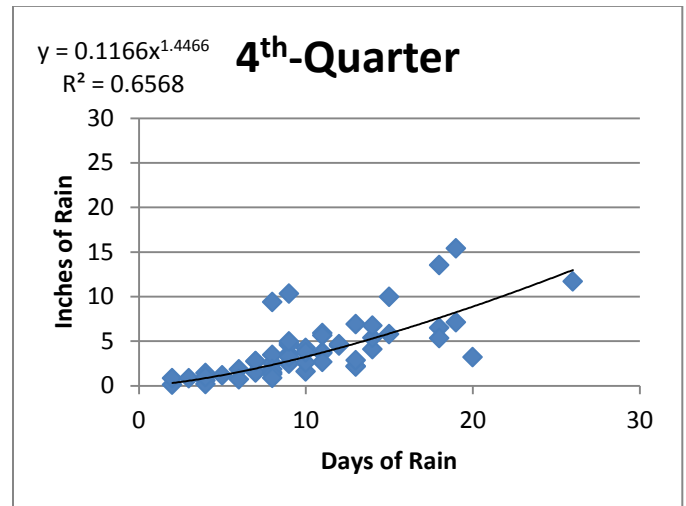
- Q-1 Exp = Number of 1<sup>st</sup> quarter expected rain events  $\geq 0.01$  “ rainfall
- Q-4 Exp = Number of 4<sup>th</sup> quarter expected rain events  $\geq 0.01$  “ rainfall
- Q-1 Obs = Number of 1<sup>st</sup> quarter observed rain events  $\geq 0.01$  “ rainfall
- Q-4 Obs = Number of 4<sup>th</sup> quarter observed rain events  $\geq 0.01$  “ rainfall

The fit of the frequency of rainfall events in the 1<sup>st</sup> and 4<sup>th</sup> quarters to the quarterly total rainfall is depicted in Figures B-1a and B-1b. The greater variation in rainfall events occurs in the 1<sup>st</sup> quarter while the 4<sup>th</sup> quarter clusters around the number of events below 10. Overall, averages of 28 rain events are expected to occur between the two quarters.



**FIGURE B-1a**

Power Fit of 1<sup>st</sup> Quarter Rain Events (1960-2013)

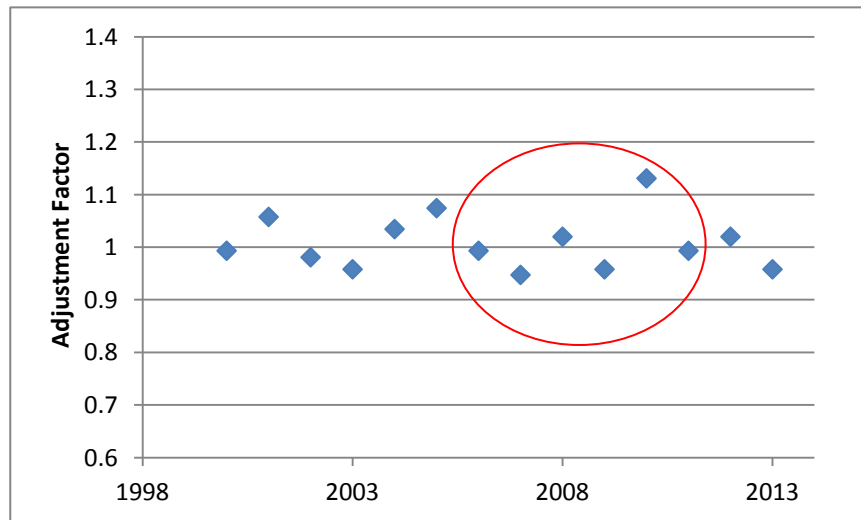


**FIGURE B-1b**

Power Fit of 4th Quarter Rain Events (1960-2013)

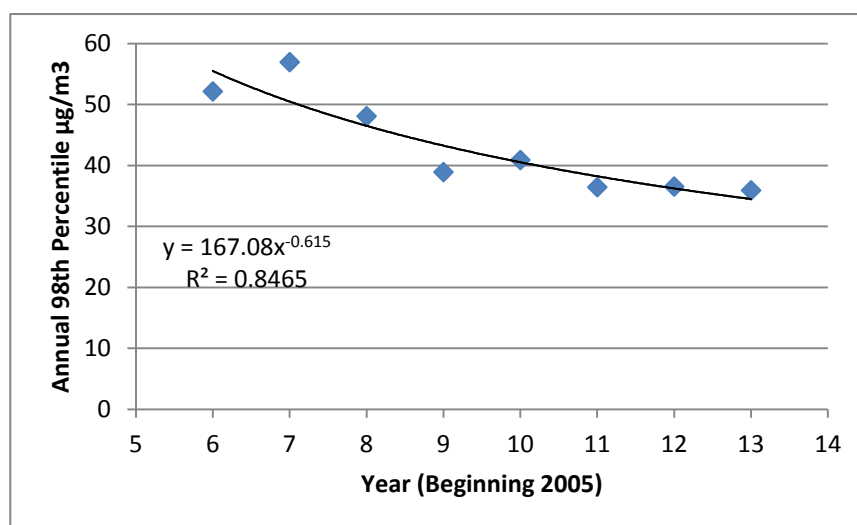
Figure B-2 depicts the trend of the drought adjustment factor calculated as the inverse of the rain frequency factor. The red circle focuses on 2006 - 2010, the period used to develop the 2008 weighted 24-hour PM<sub>2.5</sub> design value for Mira Loma used in the attainment demonstration. When the same weighting scheme is applied to the adjustment factors, the average valued 0.999; thereby indicating the 2008 Mira Loma design value was not impacted by either drought or excessively frequent rain events. The adjustment factor was applied to the 2006 through 2013 Mira Loma 24-hour 98<sup>th</sup> percentile PM<sub>2.5</sub> to normalize the annual concentration for year-to-year variations in drought potential. Figure B-3 presents the trend of the rain event normalized 98<sup>th</sup> percentile concentrations for Mira Loma. The trend was extended to both 2014 and 2015 to provide an estimate of the data for a normal rain event scenario (28 days combined for the 1<sup>st</sup> and 4<sup>th</sup> quarters).

Table B-1 provides the observed rain day summary for the Basin as measured at Downtown Los Angeles. Rain day totals for 2014 include the observed total for Q-1 and the long-term average number of days for Q-4. For this analysis, 2015 rain day totals are assumed equal to 2014 rain day totals. The rain frequency factor (RFF) is for each year and the adjustment factor (1/RFF) to estimate rainfall which assumes that the year experiences the long term average numbers of rain days are also provided.



**FIGURE B-2**

**Trend of Annual Drought Adjustment Factor (1/RFF)**

**FIGURE B-3**

**Power Law Fit of Mira Loma PM2.5 Adjusted for Normal Rainfall**

**TABLE B-1**

**Trend Estimated Impact of the Drought on Basin 24-Hr PM2.5 Attainment**

| 2006                                                                                 | 2007  | 2008  | 2009  | 2010  | 2011  | 2012 | 2013  | 2014* | 2015** |
|--------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|--------|
| <b>Annual Rainfall</b>                                                               |       |       |       |       |       |      |       |       |        |
| 11.61                                                                                | 5.66  | 14.43 | 9.39  | 23.09 | 12.26 | 8.15 | 3.6   | 5.16  | 5.16   |
| <b>Q-1 Rain Days</b>                                                                 |       |       |       |       |       |      |       |       |        |
| 19                                                                                   | 10    | 19    | 12    | 18    | 17    | 11   | 13    | 8     | 8      |
| <b>Q-4 Rain Days</b>                                                                 |       |       |       |       |       |      |       |       |        |
| 8                                                                                    | 9     | 12    | 9     | 26    | 10    | 20   | 8     | 10    | 10     |
| <b>Q-1 &amp; Q-4 Rain Days</b>                                                       |       |       |       |       |       |      |       |       |        |
| 27                                                                                   | 19    | 31    | 21    | 44    | 27    | 31   | 21    | 18    | 18     |
| <b>Rain Freq Factor (RFF)</b>                                                        |       |       |       |       |       |      |       |       |        |
| 1.006                                                                                | 1.055 | 0.98  | 1.043 | 0.884 | 1.006 | 0.98 | 1.043 | 1.061 | 1.061  |
| <b>Adjustment Factor (1/RFF) To Estimate PM2.5 for Average Weather Year Rainfall</b> |       |       |       |       |       |      |       |       |        |
| 0.994                                                                                | 0.948 | 1.02  | 0.958 | 1.131 | 0.994 | 1.02 | 0.958 | 0.943 | 0.943  |

\* 2014 Q-4 rain events assumed average (10)

\*\* 2015 Drought assumed as severe as 2014

## **ESTIMATING THE IMPACT OF THE DROUGHT ON THE PM2.5 TREND**

Table B-2 first presents the 24-hr PM2.5 data for the Mira Loma design site including the observed 98<sup>th</sup> percentile concentration from 2006 through 2013 and the three year average design value for 2008 through 2013. Table B-2 then outlines the steps to estimate the drought impact to the observed Mira Loma annual 98<sup>th</sup> percentile concentration and the methodology to estimate the impact to both 2014 and 2015.

Step-1 adjusts the observed 98<sup>th</sup> percentile Mira Loma data to estimate the trend for average rain events. Step-2 and Step-3 use the power law equation (shown in Figure A-4) to estimate the 98<sup>th</sup> percentile concentration at Mira Loma for 2006 through 2015 based on the trend and the assumption of average rain event occurrences. The trend projected concentrations for 2014 and 2015 are projected to be 32.97 and 31.60  $\mu\text{g}/\text{m}^3$  for average rain years. Step-5 applies the RFF to the 2014 and 2015 normalized 98<sup>th</sup> percentile PM2.5 estimated concentrations to address the drought conditions. Step-6 adds the projected 2014 drought impacted 98<sup>th</sup> percentile concentration to the observed values for 2006 through 2013. Step-7 presents the revised design values which now incorporate the estimated impact of the 2014 drought. As estimated, the 2014 design value is expected to fail to meet attainment reflecting the severity of the 2013 and 2014 drought conditions. Steps-8 and-9 repeat Steps-6 and-7 but with the addition of the 2015 power law estimated 2015 98<sup>th</sup> percentile to estimate the potential for attainment to the NAAQS if the weather returns to average conditions. In this scenario, the projected 2015 98<sup>th</sup> percentile concentration and the 2015 design value will meet the NAAQS. Steps-10 and -11 repeat steps-8 and -9 for the 2015 assumption of continued drought. As calculated, the projected 2015 98<sup>th</sup> percentile concentration and the 2015 design value will still meet the NAAQS under continued drought conditions.

## **SUMMARY**

The preceding analysis projects attainment of the 24-hour PM2.5 standard by 2015, considering the effects of recent drought conditions. However, there remains considerable uncertainty in the PM2.5 monitoring results for 2014 and the meteorological conditions and frequency of rainfall that will occur in 2015. In order to demonstrate attainment the 98<sup>th</sup> percentile of the 2015 24-hr PM2.5 readings at Mira Loma has to be significantly below the standard of 35.4  $\mu\text{g}/\text{m}^3$  to compensate for high exceedances caused by the drought in 2013 and 2014, achieving a 3-year average design value at or below the standard. Although additional emissions reductions are expected in 2015, attainment of the standard, given the variability of weather conditions, remains far from certain.

~~The trend projected 2015 design concentration is expected to demonstrate attainment if normal rainfall occurs in 2015. With an extension of the drought into 2015, the projected 2015 design concentration will still be below 35.4  $\mu\text{g}/\text{m}^3$  and show attainment.~~

TABLE B-2

Trend Estimated Impact of the Drought on Basin 24-Hr PM<sub>2.5</sub> Attainment

| 2006                                                                                                                                         | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014* | 2015** |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| <b>Mira Loma Observed 98th Percentile PM<sub>2.5</sub></b>                                                                                   |       |       |       |       |       |       |       |       |        |
| 52.5                                                                                                                                         | 60.1  | 47.14 | 40.62 | 36.17 | 36.7  | 35.83 | 37.5  |       |        |
| <b>Mira Loma PM<sub>2.5</sub> Design***</b>                                                                                                  |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       | 53.2  | 49.3  | 41.3  | 37.8  | 36.2  | 36.7  |       |        |
| <b>Step-1: Mira Loma Adjusted for Average Weather Year Rainfall</b>                                                                          |       |       |       |       |       |       |       |       |        |
| 52.16                                                                                                                                        | 56.96 | 48.1  | 38.93 | 40.91 | 36.46 | 36.56 | 35.94 |       |        |
| <b>Step-2: Mira Loma Design Adjusted for Average Weather Year Rainfall</b>                                                                   |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       | 52.4  | 48    | 42.6  | 38.8  | 38    | 36.3  |       |        |
| <b>Step-3: Power Law Fit of Mira Loma Adjusted for Average Weather Year Rainfall</b>                                                         |       |       |       |       |       |       |       |       |        |
| 55.51                                                                                                                                        | 50.49 | 46.51 | 43.26 | 40.54 | 38.24 | 36.24 | 34.5  |       |        |
| <b>Step-4: Mira Loma Trend Projected 2014 &amp; 2015 98th Percentile PM<sub>2.5</sub> With Average Rainfall</b>                              |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       |       |       |       |       |       |       | 32.97 | 31.60  |
| <b>Step-5: Mira Loma Trend Projected 2014 &amp; 2015 98th Percentile PM<sub>2.5</sub> Adjusted for Drought</b>                               |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       |       |       |       |       |       |       | 34.98 | 33.53  |
| <b>Step-6: Mira Loma 98th Percentile with Trend Projected 2014 98th Percentile PM<sub>2.5</sub> Adjusted for Drought</b>                     |       |       |       |       |       |       |       |       |        |
| 52.5                                                                                                                                         | 60.1  | 47.14 | 40.62 | 36.17 | 36.7  | 35.83 | 37.5  | 34.98 |        |
| <b>Step-7: Mira Loma Design with Trend Projected 2014 98th Percentile PM<sub>2.5</sub> Adjusted for Drought</b>                              |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       | 53.2  | 49.3  | 41.3  | 37.8  | 36.2  | 36.7  | 36.1  |        |
| <b>Step -8: Mira Loma 98th Percentile with Trend Projected 2014 98th Percentile PM<sub>2.5</sub> Adjusted for Drought &amp; 2015 Average</b> |       |       |       |       |       |       |       |       |        |
| 52.5                                                                                                                                         | 60.1  | 47.14 | 40.62 | 36.17 | 36.7  | 35.83 | 37.5  | 34.98 | 31.60  |
| <b>Step-9: Mira Loma Design with Trend Projected 2014 98th Percentile PM<sub>2.5</sub> Adjusted for Drought &amp; Average 2015</b>           |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       | 53.2  | 49.3  | 41.3  | 37.8  | 36.2  | 36.7  | 36.1  | 34.7   |
| <b>Step-10: Mira Loma 98th Percentile with Trend Projected 2014 &amp; 2015 98th Percentile PM<sub>2.5</sub> Adjusted for Drought</b>         |       |       |       |       |       |       |       |       |        |
| 52.5                                                                                                                                         | 60.1  | 47.14 | 40.62 | 36.17 | 36.7  | 35.83 | 37.5  | 34.98 | 33.53  |
| <b>Step-11: Mira Loma Design with Trend Projected 2014 &amp; 2015 98th Percentile PM<sub>2.5</sub> Adjusted for Drought</b>                  |       |       |       |       |       |       |       |       |        |
|                                                                                                                                              |       | 53.2  | 49.3  | 41.3  | 37.8  | 36.2  | 36.7  | 36.1  | 35.3   |

\* 2014 Q-4 rain events assumed average (10)

\*\* 2015 Drought assumed as severe as 2014

\*\*\* Design values are based on 3-year average and 98<sup>th</sup> percentile concentration. For example, 53.2 µg/m<sup>3</sup> in 2008 is derived from the average of 2006-2008 data  $(52.5 + 60.1 + 47.14)/3 = 53.2 \text{ µg/m}^3$ 

## REFERENCES

1. South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, Diamond Bar, CA., February 2013.

2. South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, Appendix V, Modeling Attainment Demonstrations, Diamond Bar, CA., February 2013.
3. U.S. EPA, AP-42, Section 13.2.1, Paved Roads,  
<http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf>.

**ATTACHMENT C**

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**NEW TRANSPORTATION CONFORMITY BUDGETS  
FOR 2015**

## **BACKGROUND**

U.S. EPA's transportation conformity rule, found in 40 CFR parts 51 and 93, details the requirements for establishing motor vehicle emissions budgets in SIPs for the purpose of ensuring the conformity of transportation plans and programs with the SIP attainment demonstration. The on-road motor vehicle emissions budgets act as a "ceiling" for future on-road mobile source emissions. Exceedances of the budget indicate an inconsistency with the SIP, and could lead to a conformity "lapse" and its related consequences if not corrected before the next conformity deadline (e.g., during a lapse, certain categories of transportation projects cannot proceed). As required by the CAA, a comparison of regional on-road mobile source emissions to these budgets will occur during the periodic updates of regional transportation plans and programs.

The on-road motor vehicle emissions estimates for the Final 2012 AQMP were analyzed using CARB's EMFAC2011 emission factors for the transportation activity data provided by Southern California Association of Governments (SCAG) from their adopted 2012 Regional Transportation Plan (2012 RTP). This update which is in response to the Subpart-4 requirements replaces the on-road motor vehicle budgets for 2014 with those for 2015 the revised attainment date. The PM<sub>2.5</sub> emissions budgets for PM<sub>2.5</sub>, and the PM<sub>2.5</sub> precursors, VOC and NO<sub>x</sub>, are derived from the annual average inventory.

This approach is consistent with U.S. EPA's transportation conformity rule, which provides that if emissions budgets rely on new control measures, these measures must be specified in the SIP and the emissions reductions from each control measure must be quantified and supported by agency commitments for adoption and implementation schedules. Moreover, the rule provides that conformity analyses by transportation agencies may not take credit for measures which have not been implemented unless the measures are "projects, programs, or activities" in the SIP supported by written implementation commitments by the responsible agencies (40 CFR 93.122(a)(3)). The emissions budgets for PM<sub>2.5</sub> are provided for the 2015 attainment year. However, since transportation analyses are needed beyond the attainment dates, the carrying capacities for the PM<sub>2.5</sub> attainment demonstration also serve as the budgets for future years. For transportation conformity analysis, a trading mechanism can be established based on the PM<sub>2.5</sub> forming potential developed through the modeling analysis for the emission budgets for various pollutants in SCAB.

## **2015 VMT AND MOTOR VEHICLE BUDGETS**

As previously stated, the 2014 motor vehicle emissions budgets were based on 2012 RTP Final annual average VMT data provided by SCAG. At that time, SCAG provided VMT projections for several milestone years including 2019. Attachment D of Appendix III of the 2012 AQMP

lists the VMT distributions and on-road emissions by vehicle category generated by EMFAC11 using the 2012 RTP VMT for the two years.

The 2015 VMT distribution was interpolated from the 2012 RTP analysis years 2014 and 2019 profiles provided by SCAG. The 2015 VMT derived from the interpolation was input to EMFAC11 to generate the 2015 on-road motor vehicle emissions budgets listed in Table C-1.

**TABLE C-1**

**2015 Motor Vehicle Emissions Budgets: PM2.5**  
(Annual Average - Tons Per Day)\*

|                                             | VOC        | NOx        | PM2.5     |
|---------------------------------------------|------------|------------|-----------|
| <b>Baseline EMFAC 2011</b>                  | 114.26     | 265.94     | 11.74     |
| RFG                                         | -4.27      | --         | --        |
| SMOG Check                                  | -4.75      | -2.60      | --        |
| PM2.5: Re-entrained Road Dust (paved)       | --         | --         | 7.29      |
| PM2.5 Re-entrained Road Dust (unpaved)      | --         | --         | 0.58      |
| Road Construction Dust                      | --         | --         | 0.22      |
| <b>2015 Mobile Source Emission Budget**</b> | <b>106</b> | <b>264</b> | <b>20</b> |

\*Rounded up to the nearest whole number

\*\*2015 budget is applicable to all future years beyond 2015.

In the Final 2012 AQMP the approximate weighting ratios of the precursor emissions for 24-hour PM2.5 formation in equivalent tons per day of NOx are: VOC: 0.3 (reducing one ton of VOC is equivalent to reducing 0.3 ton of NOx), NOx: 1.0, and PM2.5: 14.8 (i.e., reducing one ton of PM2.5 is equivalent to reducing 14.8 tons of NOx). This mechanism allows emissions below the budget for one pollutant to be used to supplement another pollutant exceeding the budget based on the ratios established herein. Clear documentation of the calculations used in the trading should be included in the conformity analysis. This trading approach is consistent with what U.S. EPA approved in 2011, The Revisions to the 2007 PM2.5 SIP, where the precursor substitution methodology was established.

The basic trading ratios are defined by the 24-hour PM2.5 regional modeling attainment demonstration. Briefly, NOx emissions reductions are scaled to the reduction of Basin ammonium nitrate (including water bonding). Similarly, reductions of VOC are scaled to changes in the organic carbon species while reductions in directly emitted particulates are scaled

to the projected changes in the elemental carbon and “others” portions of the PM<sub>2.5</sub> mass. Table C-2 summarizes the trading equivalencies in TPD.

**TABLE C-2**

Trading Equivalencies for PM<sub>2.5</sub> Motor Vehicle Emissions Budgets

| ONE TON OF        | IS EQUIVALENT IN TERMS OF PM <sub>2.5</sub> FORMATION TO THIS MANY TONS OF |        |                     |
|-------------------|----------------------------------------------------------------------------|--------|---------------------|
|                   | NO <sub>x</sub> :                                                          | VOC:   | PM <sub>2.5</sub> : |
| NO <sub>x</sub>   | 1                                                                          | 3.151  | 0.067               |
| VOC               | 0.317                                                                      | 1      | 0.021               |
| PM <sub>2.5</sub> | 14.833                                                                     | 46.792 | 1                   |

An example of how the trading mechanism would work follows; If the amount of NO<sub>x</sub> calculated exceeds the budget by 0.75 TPD, then that overage could be offset by trading 2.36 TPD of excess VOC emissions reductions (e.g 3.151 VOC/1 ton of NO<sub>x</sub> x 0.75 TPD NO<sub>x</sub> required = 2.36 TPD VOC). In this case, “excess” VOC emission reductions would be those beyond what are needed to meet the VOC budget. Similarly 0.050 TPD of directly emitted PM<sub>2.5</sub> emissions below the budgeted amount could also be traded to the NO<sub>x</sub> emissions category and subtracted from the NO<sub>x</sub> total to allow NO<sub>x</sub> to meet its budget. In other words, the trading mechanism can be multi-pollutant and multi-directions. It should be noted that the trading calculations are performed prior to the final rounding to demonstrate conformity with the budgets.

**ATTACHMENT D**

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**UPDATED RACM/RACT ANALYSIS**

## **INTRODUCTION**

In accordance with the April 25, 2014 final rule “Identification of Nonattainment Classification and Deadlines for Submission of State Implementation Plan (SIP) Provisions for the 1997 Fine Particle (PM<sub>2.5</sub>) National Ambient Air Quality Standard (NAAQS) and 2006 PM<sub>2.5</sub> NAAQS,” (79 FR 31566; June 2, 2014), under Subpart 4, the South Coast Air Basin (Basin) is classified as a “moderate” non-attainment area with respect to the 2006 24-hour PM<sub>2.5</sub> NAAQS. The EPA Final Rule requires that areas classified as moderate nonattainment or higher to develop and submit a demonstration that their current air pollution rules fulfill the 24-hour PM<sub>2.5</sub> Reasonably Available Control Measures (RACM)/ Reasonably Available Control Technology (RACT) assessment. The RACM/RACT analysis provides a comparison of the SCAQMD rules and regulations governing precursor emission limits to those established by U.S. EPA guidance and representative agencies within California and elsewhere throughout the U.S. As a component of the 2012 Air Quality Management Plan (AQMP), a RACM/RACT Demonstration for 24-hour PM<sub>2.5</sub> was submitted to U.S. EPA for inclusion in the California SIP.

This PM<sub>2.5</sub> RACM/RACT analysis serves as a supplement to the 2012 AQMP submittal to review and where applicable update the SCAQMD toolkit to advance emissions controls to meet the current state of the science.

## **REGULATORY HISTORY**

RACM/RACT analyses were incorporated as components of the 2007 and 2012 Air Quality Management Plan (AQMP). The 2007 demonstration was a comprehensive analysis conducted to identify and select control measures to reduce ozone and particulate precursors NO<sub>x</sub>, VOC, SO<sub>x</sub> and particulate emissions (to meet the 8-hour ozone and annual PM<sub>2.5</sub> standards). The 2007 RACM/RACT analysis focused on rules, Control Technique Guidelines (CTGs) and Alternative Control Techniques (ACTs) adopted through 2006. The analysis identified one SCAQMD rule that required additional evaluation. The 2007 AQMP RACM/RACT analysis was approved by U.S. EPA for inclusion in the SIP in 2011.

The 2012 RACM/RACT analysis focused on precursors of PM<sub>2.5</sub> (including ammonia, NO<sub>x</sub>, SO<sub>x</sub>, VOC and particulate matter) to attain the 24-hour average PM<sub>2.5</sub> standard. From 2006 through 2012, 12 CTGs and ACTs were updated. To address this, the 2012 RACM/RACT analysis evaluated more than 100 rules and regulations, and 100 control measures developed in the 2007-2012 timeframe by other air districts in the nation. Through this analysis, ~~two~~ three additional rules (SCAQMD Rules 1115, 1130 and 1168) were targeted for further evaluation and potential rule development. The 2012 RACM/RACT analysis was submitted to U.S. EPA where evaluation and approval is pending.

Subsequently in July 2014, the SCAQMD submitted a RACT SIP update to U.S. EPA as a component of the 2016 AQMP. The 2016 RACT analysis built upon the 2007 and 2012 RACM/RACT assessments focuses on recently adopted rules and regulation by other agencies in California and the nation. It is important to note that no additional CTG or ACTs were released since the 2012 evaluation. The 2016 RACT analysis evaluated more than 30 rules that were recently developed/amended by other ozone nonattainment air districts from September 2012 through November 2014 and identified six SCAQMD rules that have discrepancies with the companion rules at other California agencies.

Table D-1 summarizes the number of rules assessed between the two prior RACM/RACT analyses. Overall, the three assessments concluded that the SCAQMD's rules and regulations were for the most part equivalent to, or more stringent than other districts' rules and regulations and their proposed control measures in their respective SIPs. Several of the SCAQMD rules identified for evaluation have been amended to address the targeted issue.

The 2007 RACM/RACT assessments "Appendix VI: Reasonably Available Control Measures (RACM) Demonstration" is available at:

<http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2007-air-quality-management-plan/2007-aqmp-appendix-vi.pdf?sfvrsn=2>

The 2012 RACM/RACT assessments "Appendix VI: Reasonably Available Control Measures (RACM) Demonstration" is available at:

[http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-\(february-2013\)/appendix-vi-final-2012.pdf](http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/appendix-vi-final-2012.pdf)

The 2016 AQMP RACT Analysis, Governing Board Letter, and Resolution are available at:

<http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2014/2014-jun6-031.pdf?sfvrsn=2>

## **RACM/RACT EVALUATION UPDATE**

This addendum to the 2012 RACT demonstration provides another update to the corresponding analyses discussed above. According to the 2013 Annual Emissions Report (AER), there are 25 major source facilities of PM<sub>2.5</sub> or precursors (> 100 TPY of ROG, NO<sub>x</sub>, SO<sub>x</sub> or TSP) in the Basin. New sources or sources undergoing modification/relocation after the previous RACT determination are subject to Best Available Control Technology (BACT), Best Available Retrofit Control Technology (BARCT) or Lowest Achievable Emissions Rate (LAER) requirement, which are more stringent than RACT. The current update evaluated rules governing emissions limits and modes of operation for the five precursor emissions categories including particulate matter, SO<sub>x</sub>, NO<sub>x</sub>, VOCs and ammonia (NH<sub>3</sub>). Table D-2 provides a summary of SCAQMD

rules evaluated for PM<sub>2.5</sub> precursor emissions control effectiveness. Since the 2012 AQMP submittal, the U.S. EPA has not issued new CTGs or ACTs documents for VOC and NO<sub>x</sub> sources. SCAQMD rules applicable to major source facilities were determined RACT in the 2007/2012 RACM/RACT assessments. Table D-3 provides an updated brief discussion of the RACT issues for rules identified for further evaluation in the three demonstrations. In particular, the 2016 8-hour ozone RACT update identified six SCAQMD rules that have discrepancies with companion rules at other California Agencies. Staff has completed their initial assessment and two rules may potentially require updating and amendment:

- **Rule 2002** – The current NO<sub>x</sub> emissions rate limit for cement kilns in SCAQMD is slightly higher when compared to the Bay Area AQMD Regulation 9, Rule 13 (2.73 vs, 2.3 lbs/ton of clinker). The RECLAIM program is currently being evaluated to establish new BARCT emissions limits and facility allocations. The proposed new limit (0.5 lbs/ton clinker) exceeds RACT. The proposed amendment to the NO<sub>x</sub> RECLAIM is underway and is scheduled for adoption in the second quarter of 2015.
- **Rule 1115** - Rule 1115 is not as stringent as the 2008 EPA CTG for a few coating processes for facilities emitting > 15 lbs/day. Staff will commit to further rule evaluation.

Tables D-4 through D-8, provide the specific RACT analysis for particulate matter, SO<sub>x</sub>, NO<sub>x</sub>, VOC and NH<sub>3</sub> rules and regulations, respectively. In the tables a rule is specifically designated to meet RACT if the applicable CTG or ACT is met and has been approved in the 2007 SIP. The category defined as RACT Equivalent has been designated to delineate if the rule meets the RACT criteria but has minor differences in application and implementation at other agencies. Where a rule has been identified as undergoing amendment or has been targeted for further evaluation, a brief description of the issues and current/future actions are discussed. As previously stated, the SCAQMD's rules and regulations were for the most part equivalent to, or more stringent than other districts' rules and regulations.

Ammonia is currently regulated in the South Coast Air Basin through existing SCAQMD rules (see Table D-8) and is included as part of the control strategy in the 2012 AQMP, specifically control measure BCM-04 (*Further Ammonia Reductions from Livestock Waste*) listed in Table F-1 in Attachment F. Potential ammonia controls are also evaluated under the updated RACM/RACT Analysis (see Table D-8). But note that as discussed in Attachment E, ammonia controls are much less effective at reducing ambient PM<sub>2.5</sub> levels than other precursors. Also note that the South Coast Air Basin is currently close to meeting the 24-hour PM<sub>2.5</sub> standard (see "Air Quality Monitoring Data" on page 4 of the Supplement) and anticipated to meet the standard this year (see Attainment Demonstration in Attachment A). Under the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 (57 FR 13498 at 13560 (April 16, 1992), "where measures that might in fact be available for implementation in the nonattainment area could not be implemented on a schedule that would

advance the date for attainment in the area, EPA would not consider it reasonable to require implementation of such measures.” Given that the U.S. Court of Appeals (*Nat’l Res. Def. Council v. EPA*, 706 F.3d 428 (D.C. Cir. 2013)) decided in January 2013 to compel U.S. EPA to apply Subpart 4 planning provisions to PM<sub>2.5</sub>, the resulting withdrawal of the EPA Implementation Guidance occurred in June 2013, the re-classification of the South Coast PM<sub>2.5</sub> nonattainment area to Moderate was finalized in July 2014, and the fact that rulemaking takes many months to complete, no new potential measures identified in the current RACM/RACT analysis could possibly be implemented in time to advance the attainment date to 2014. As such, no further measures beyond the control strategy in the 2012 AQMP are being proposed at this time as a result of the RACM/RACT analysis.

## SUMMARY

This analysis updates the three preceding RACM/RACT and RACT analyses. Overall, the SCAQMD makes the following general findings:

1. SCAQMD’s rules, meet the U.S. EPA’s criteria for RACT acceptability equaling or exceeding applicable CTG and ACT specifications and demonstrating comparable emissions limits and requirements to other agency rules.
2. The RACT analysis covers all 5 PM<sub>2.5</sub> precursor emissions categories.
3. All new major sources in the Basin are subject to BACT under NSR, which is by definition more stringent than RACT.
4. SCAQMD commits to further evaluate the rules identified above for potential emission reductions as part of the 2016 AQMP control development.

**TABLE D-1****Summary of Recent SCAQMD RACT and RACM/RACT Analyses**

| <b>SIP</b> | <b>TYPE SUBMITTAL</b> | <b>STATUS</b>         | <b>NUMBER OF SCAQMD RULE/REGULATIONS EVALUATED</b> | <b>NUMBER OF UPDATED CTGS/ACTS ASSESSED</b> | <b>RULES REQUIRING FURTHER EVALUATION</b>                                                |
|------------|-----------------------|-----------------------|----------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------|
| 2007       | RACM/RACT             | EPA Approval 11/09/11 | 82                                                 | 4                                           | Rule 1130                                                                                |
| 2012       | RACM/RACT             | Pending               | >100                                               | 12                                          | Rule 1130<br>Rule 1115<br>Rule 1168                                                      |
| 2016       | RACT                  | Pending               | 20                                                 | 0                                           | Rule 223<br>Rule 462<br>Rules 1112/2002<br>Rules 1118/1150.1<br>Rule 1130<br>Rule 1148.1 |

**TABLE D-2****Summary of SCAQMD Rules Evaluated For PM<sub>2.5</sub> Precursor Emissions Control Effectiveness**

| <b>PRECURSOR</b> | <b>NUMBER OF APPLICABLE SCAQMD RULES</b> | <b>DIRECT SOURCE RULES</b> | <b>INDIRECT <u>DISTRICT</u> <u>MOBILE</u> <u>SOURCE</u> RULES</b> | <b>PROHIBITIONS</b> | <b>AMENDED SINCE 2006</b> |
|------------------|------------------------------------------|----------------------------|-------------------------------------------------------------------|---------------------|---------------------------|
| PM               | 27                                       | 15                         | 5                                                                 | 7                   | 7                         |
| SO <sub>x</sub>  | 13                                       | 6                          | 5                                                                 | 2                   | 1                         |
| NO <sub>x</sub>  | 22                                       | 15                         | 5                                                                 | 2                   | 10                        |
| VOC              | 57                                       | 52                         | 5                                                                 | 0                   | 21                        |
| NH <sub>3</sub>  | 5                                        | 5                          | 0                                                                 | 0                   | 3                         |

**TABLE D-3****Updates of the Rules Further Evaluated in the 2012 RACT/RACM Demonstration and 2016 RACT Analysis**

| <b>RULE(S)</b> | <b>SCAQMD EVALUATION</b>                                                                                                                                                                                                                                                                                                                                                                |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 223            | Rule 223 meets RACT through its implementation of technically feasible mitigation measures. The focus of the SJVAPCD rule is not applicable in the Basin for dry feed operations.                                                                                                                                                                                                       |
| 462            | Rule 462 is more stringent than the CTG and meets the core requirements for RACT but not as stringent as BAAQMD Rule 8-33 with respect to the emissions limit for Class A facilities. Staff will commit to further rule evaluation.                                                                                                                                                     |
| 1112/2002      | Cement Kiln emissions limits were evaluated as part of the 2005 RECLAIM (Rule 2002) update. RECLAIM is currently being evaluated to establish new BARCT emissions limits and facility allocations. The proposed new limits exceed RACT. The RECLAIM amendment is projected to be <u>considered for</u> adoption by the second quarter of 2015.                                          |
| 1115           | Rule 1115 is not as stringent as the 2008 EPA CTGs for a few coating processes for facilities emitting > 15 lbs/day. The two facilities subject to Rule 1115 have a small emission inventory of about 0.02 tpd. Staff will commit to further rule evaluation.                                                                                                                           |
| 1118/1150.1    | Rule 1118 was determined to be RACT from the 2007 SIP targeting flare emissions from refinery. SJVAPCD Rule 4311 (exempting municipal landfills) applies to other sources > 10 TPY. SCAQMD has a small inventory of flare emissions from sources other than refinery and landfill (regulated by Rule 1150.1). Rules 1118 is consistent with SJVAPCD Rule 4311 and therefore meets RACT. |
| 1130           | Rule 1130 was recently amended to reduce fountain solution VOC content to between 16-85 g/L with optional control device efficiency of 90-95%. The rule meets current CTG specifications.                                                                                                                                                                                               |
| 1148.1         | Glycol dehydrators in gas and oil production regulated by VCAPCD's Rule 71.5 are jointly regulated by SCAQMD Rules 1148.1 and Rule 1173 (Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants) which meet RACT.                                                                                                          |
| 1168           | Staff has completed its evaluation and is proposing to reduce primer VOC limits to 250 g/L to meet the CTG. Additional VOC reductions to emissions limits are proposed that will exceed RACT. The Rule is expected to be considered 1 <sup>st</sup> quarter 2015.                                                                                                                       |

All the SCAQMD rules in Tables D-4 through D-8 have been SIP approved except for the following rules (adoption/last amendment date): Rules 223 (5/2/2014), 444 (1/9/2009), 469 (2/13/1981), 1110.2 (10/20/1978), 1111 (9/7/2012), 1112 (9/5/2014), 1113 (6/6/1986), 1116.1 (9/9/2011), 1122 (11/7/2014), 1125 (6/16/2000), 1130 (6/16/2000), 1147 (7/9/2010), 1149 (10/20/2000), 1153.1 (5/5/2006), 1155 (7/12/2013), 1166 (9/6/2013), 1168 (5/1/2009), 1171 (3/7/2008), 1183 (5/2/2014), 1186.1 (5/2/2008), 1191 (5/11/2001), 1192 (1/7/2005), 1193 (5/1/2009), 1194 (3/12/1993), 1195 (6/2/2006).

**TABLE D-4**  
**Evaluation of SCAQMD Particulate Matter (PM) Rules and Regulations**

| RULE NO.                             | TYPE | RULE TITLE                                                                                                                                                                                                                                                                                                                                                                                                        | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EVALUATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1105.1                               | PM   | Reduction of PM10 and Ammonia Emissions From Fluid Catalytic Cracking Units<br>(Adopted 11/7/03)                                                                                                                                                                                                                                                                                                                  | 0.005 grain/dscf PM10 and 10 ppmv NH3 slip                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Meets RACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1112.1                               | PM   | Emissions of Particulate Matter from Cement Kilns<br>(Amended 12/4/09)                                                                                                                                                                                                                                                                                                                                            | Applicable to gray cement only. 0.4 lbs PM/tons of kiln feed for kilns rating less than 75 tons per hour; or 30 lbs per hour for kiln rating of 75 tons per hour or more.                                                                                                                                                                                                                                                                                                                                                                                                                               | Note: Companion Rule 1156 has more stringent PM limit than this rule.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Meets RACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1133,<br>1133.1,<br>1133.2<br>1133.3 | PM   | <p>Rule 1133 - Composting and Related Operations – General Administrative Requirements<br/>(Adopted 1/10/03)</p> <p>Rule 1133.1 – Chipping and Grinding Activities<br/>(Amended 7/8/11)</p> <p><u>Rule 1133.2 - Emission Reductions from Co-Composting Operations (Adopted January 10, 2003)</u></p> <p><u>Rule 1133.3 - Emission Reductions from Greenwaste Composting Operations (Adopted July 8, 2011)</u></p> | <p>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.</p> <p><u>Rule 1133.3 establishes operational best management practices (BMPs) for greenwaste composting operations. If the facility processes more than 5,000 tons per year of foodwaste, any active phase of composting containing more than 10% foodwaste, by weight, must use an emission control device with</u></p> | <p>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. 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).</p> | <p><u>RACT Equivalent.</u></p> <p><u>There is no federal policy or guidance describing RACT for this source category.</u></p> <p><u>In April 2012, USEPA determined that Rules 1133.1 and 1133.3 fulfill RACT requirements.</u></p> <p><u>Rules 1133 and 1133.2 were determined to meet RACT in November 2003. San Joaquin adopted analogous requirements for this source category (Rule 4565) in 2007.</u></p> <p><u>SCAQMD Rule 1133.2 is more stringent than San Joaquin's Rule 4565 for larger co-composting</u></p> |

**TABLE D-4** (continued)  
**Evaluation of SCAQMD Particulate Matter (PM) Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE | CURRENT RULE REQUIREMENTS                                              | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES | EVALUATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------|------|------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      |            | <u>an overall control efficiency of at least 80% by weight of VOC.</u> |                                                                                      | <p><u>facilities and less stringent for smaller co-composting facilities. While SCAQMD Rule 1133.2 requires either 70 or 80% overall emission reductions from all parts of composting process, San Joaquin's Rule 4565 requires add-on controls to apply only to the active composting phase. Rule 1133.2 also has more stringent requirements for in-vessel composting.</u></p> <p><u>San Joaquin's rule does not address chipping &amp; grinding as in Rule 1133.1.</u></p> <p><u>Based on the above information, Rules 1133, 1133.1, 1133.2 and 1133.3 demonstrate RACT equivalency for this source category.</u></p> |

**TABLE D-4 (continued)**  
**Evaluation of SCAQMD Particulate Matter (PM) Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                         | CURRENT RULE REQUIREMENTS                                                                                                                             | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                       | EVALUATION                                                                                                                                                                                                                                                    |
|----------|------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1137     | PM   | PM10 Reduction From Woodworking Operations (Adopted 2/1/02)        | Good housekeeping practices                                                                                                                           | Rule 1156 contains emission standard for baghouses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Meets RACT                                                                                                                                                                                                                                                    |
| 1138     | PM   | Control Of Emissions From Restaurant Operations (Adopted 11/14/97) | Require catalytic oxidizer for chain-driven charbroilers. Exemption provided for under-fired charbroilers and units cooking less than 875 lbs/week.   | Ventura Rule 74.25 (Adopted 10/12/04) has equivalent requirements as in Rule 1138. Bay Area Rule 2 of Regulation 6 (12/5/07) has emission standards of 0.74 lbs PM10 and 0.32 lbs VOC per thousand pounds of meat cooked for all chain-driven charbroilers; 1.0 lbs PM10 per thousand pounds of meat cooked for all under-fired charbroilers with combined total grill surface area of at least 10 square feet. <u>Most BAAQMD under-fired charbroilers facilities are too small to trigger the under-fired charbroilers requirements.</u> | RACT <u>Equivalent</u><br><br><u>The BAAQMD reported cost-effective values of \$17,300/ton of VOC and PM removed for HEPA filters and \$19,500/ton of VOC and PM removed for electrostatic precipitators. These cost effectiveness values go beyond RACT.</u> |
| 1140     | PM   | Abrasive Blasting (Amended 8/2/85)                                 | Visibility standard                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Meets RACT                                                                                                                                                                                                                                                    |
| 1155     | PM   | Particulate Matter Control Devices (Amended 5/2/14)                | 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 | <del>Bay Area amended Regulation 12, Rule 13 on 5/1/2013. The rule is applicable to facilities that melt or process metals (foundries, forges, heat treatment of metals, and metal recycling operations). The rule focuses on emission minimization plans.</del>                                                                                                                                                                                                                                                                           | Meets RACT                                                                                                                                                                                                                                                    |

**TABLE D-4** (continued)  
**Evaluation of SCAQMD Particulate Matter (PM) Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                                       | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                           | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b> | <b>EVALUATION</b> |
|-----------------|-------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------|
| 1156            | PM          | PM10 Emission Reductions from Cement Manufacturing Facilities (Amended 3/6/09)          | PM standards for PM control devices (0.01 gr/dcsf for existing and 0.005 gr/dcsf for new devices). Good operational practices to reduce PM emissions from aggregate and related operations |                                                                                             | Meets RACT        |
| 1157            | PM          | PM10 Emissions Reductions from Aggregate and Related Operations (Amended 9/8/06)        | Good operational practices to reduce PM emissions from aggregate and related operations                                                                                                    |                                                                                             | Meets RACT        |
| 1158            | PM          | Storage, Handling and Transport of Petroleum Coke (Amended 7/11/08)                     | Reduce PM emissions through good management practices                                                                                                                                      |                                                                                             | Meets RACT        |
| 1186            | PM          | PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations (Adopted 7/11/08) | Good management practices                                                                                                                                                                  |                                                                                             | Meets RACT        |
| 1186.1          | PM          | Less Polluting Sweepers (Amended 1/9/09)                                                | Require operators to purchase less polluting or alternative fueled street sweepers.                                                                                                        |                                                                                             | Meets RACT        |

**TABLE D-4 (concluded)**  
**Evaluation of SCAQMD Particulate Matter (PM) Rules and Regulations**

| <b>RULE NO.</b>   | <b>TYPE</b> | <b>RULE TITLE</b>                                                                                                                                                              | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                            | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                        | <b>EVALUATION</b> |
|-------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 404, 468, and 469 | PM          | <p>Rule 404 – Particulate Concentration (Amended 2/7/86)</p> <p>Rule 468 – Sulfur Recovery Units (Amended 10/8/76)</p> <p>Rule 469 – Sulfuric Acid Units (Amended 2/13/81)</p> | <p>PM limits vary from 0.01gr/dscf to 0.19 gr/dscf in Rule 404 depending on exhaust flow rates.</p> <p>Sulfuric acid mist limit in Rule 469 is 0.3 lbs per ton of acid produced (approximately 0.1 gr/dscf)</p> <p>Rule 468 for sulfur recovery units does not contain any PM standard.</p> | <p>Bay Area, Regulation 6, Rule 1 (Adopted 12/5/07) contains the following limits:</p> <ul style="list-style-type: none"> <li>• PM limit is 0.15 gr/dscf</li> <li>• Sulfuric Acid Manufacturing Plants: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.04 gr/dscf</li> <li>• Sulfur Recovery Units: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.08 gr/dscf</li> </ul> | RACT Equivalent   |
| 444               | All         | Open Burning (Amended 7/12/13)                                                                                                                                                 | Contains requirements and prohibitions for open burning to minimize emissions and smoke impacts to the public.                                                                                                                                                                              | <p>San Joaquin Valley Rule 4103 (Amended 4/15/10) contains additional best management practices compared to Rule 444 such as best management practices to control open burning of weeds.</p> <p>Bay Area, Reg 5, sets requirements for open burning, and was to forbid recreational burning during curtailment periods.</p>                                                                                                                                        | Meets RACT        |
| 445               | PM          | Wood Burning Devices (Amended 5/3/13)                                                                                                                                          | Contains requirements for wood burning devices to minimize emissions and smoke impacts to the public.                                                                                                                                                                                       | San Joaquin Valley Rule 4901 comparable to Rule 445.                                                                                                                                                                                                                                                                                                                                                                                                               | Meets RACT        |

**TABLE D-5**  
**Evaluation of SCAQMD Sulfur Oxides (SO<sub>x</sub>) Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                                  | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>EVALUATION</b>                                                                                                                                                                                                                                                                                                                   |
|-----------------|-----------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1116.1          | SO <sub>x</sub> | Lightering Vessel Operations – Sulfur Content of Bunker Fuel<br>(Adopted 10/20/78) | 0.5% sulfur by weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Meets RACT                                                                                                                                                                                                                                                                                                                          |
| 1118            | All             | Refinery Flares<br>(Amended 11/4/05)                                               | <ul style="list-style-type: none"> <li>Minimize flare emissions &amp; require smokeless operations</li> <li>Specify SO<sub>2</sub> gradually decreasing performance target to less than 0.5 tons per million barrels of crude by 2012.</li> <li>If the performance target is exceeded, the operator must 1) pay mitigation fee; or 2) submit a Flare Mitigation Plan to reduce emissions.</li> <li>Require Cause Analysis for event exceeding 100 lbs VOC, 500 lbs of SO<sub>2</sub>, or 500,000 scfm of vent gas, excluding planned shutdown, startup and turnarounds</li> <li>Require 160 ppmv H<sub>2</sub>S, 3 hour average by 1/1/09, and no limits for NO<sub>x</sub>, VOC, PM and CO.</li> </ul> | <p>U.S. EPA suggested the SCAQMD to further re-evaluate Rule 1118 (FR Vol 76 No 217, Nov 9, 2011, CBE comments).</p> <p>San Joaquin Valley Rule 4311 (Amended 6/18/09) has VOC/NO<sub>x</sub> limits for ground-level enclosed flares; SO<sub>2</sub> 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 NO<sub>x</sub>.</p> <p>Bay Area Rule 12-12 (Adopted 4/5/06) does not specify a declining SO<sub>2</sub> target and does not contain a mitigation fee option.</p> | Rule 1118 was determined to be RACT from the 2007 SIP targeting flare emissions from refinery. SJVAPCD Rule 4311 (exempting municipal landfills) applies to other sources > 10 TPY. SCAQMD has a small inventory of flare emissions from sources other than refinery and landfill. Rules 1118 is consistent with SJVAPCD Rule 4311. |
| 1119            | SO <sub>x</sub> | Petroleum Coke Calcining Operations – Oxides of Sulfur<br>(Adopted 3/2/79)         | Reduce SO <sub>x</sub> by 80%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Meets RACT                                                                                                                                                                                                                                                                                                                          |

**TABLE D-5** (continued)  
**Evaluation of SCAQMD Sulfur Oxides (SO<sub>x</sub>) Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>            | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                          | <b>EVALUATION</b> |
|-----------------|-----------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 2002            | SO <sub>x</sub> | RECLAIM<br>(Amended 11/5/10) | <p>Include facility allocations for SO<sub>x</sub> for RECLAIM facilities.</p> <p>BARCT Emissions Limits:</p> <p>Calciner, Petroleum Coke</p> <ul style="list-style-type: none"> <li>• 10 ppmv (0.11 lbs/ton coke)</li> </ul> <p>Cement Kiln</p> <ul style="list-style-type: none"> <li>• 5 ppmv (0.04 lbs/ton clinker)</li> </ul> <p>Coal-Fired Boiler</p> <ul style="list-style-type: none"> <li>• 5 ppmv (95% reduction)</li> </ul> <p>Container Glass Melting Furnace</p> <ul style="list-style-type: none"> <li>• 5 ppmv (0.03 lbs/ton glass)</li> </ul> <p>Diesel Combustion</p> <ul style="list-style-type: none"> <li>• 15 ppmv as required under Rule 431.2</li> </ul> <p>Fluid Catalytic Cracking Unit</p> <ul style="list-style-type: none"> <li>• 5 ppmv (3.25 lbs/thousand barrels feed)</li> </ul> <p>Refinery Boiler/Heater</p> <ul style="list-style-type: none"> <li>• 40 ppmv (6.76 lbs/mmscft)</li> </ul> <p>Sulfur Recovery Units/Tail Gas</p> <ul style="list-style-type: none"> <li>• 5 ppmv for combusted tail gas (5.28 lbs/hour)</li> </ul> <p>Sulfuric Acid Manufacturing</p> <ul style="list-style-type: none"> <li>• 10 ppmv (0.14 lbs/ton acid produced)</li> </ul> | Other Districts do not have RECLAIM. SCAQMD has set most stringent BARCT for SO <sub>x</sub> sources in the 2010 RECLAIM Amendments. | Exceeds RACT      |

**TABLE D-5 (concluded)**  
**Evaluation of SCAQMD Sulfur Oxides (SO<sub>x</sub>) Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                     | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                           | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                              | <b>EVALUATION</b> |
|-----------------|-----------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 431.1           | SO <sub>x</sub> | Sulfur Content Gaseous Fuels<br>(Amended 6/12/98)                     | H <sub>2</sub> S Limits:<br><br>Natural gas (16 ppmv)<br>Refinery Gas (40 ppmv )<br>Landfill Gas (150 ppmv)<br>Sewage Gas (40 ppmv)<br>Other Gas (40 ppmv) |                                                                                                                                                                                                                                                                                                          | Meets RACT        |
| 431.2           | SO <sub>x</sub> | Sulfur Content Liquid Fuels<br>(Amended 9/15/2002)                    | Limit: 15 ppm by weight                                                                                                                                    |                                                                                                                                                                                                                                                                                                          | Meets RACT        |
| 1101            | SO <sub>x</sub> | Secondary Lead Smelters – Sulfur Oxides<br>(Amended 10/7/77)          | 200 ppmv SO <sub>x</sub> and 4.2 lbs SO <sub>x</sub> per ton process weight                                                                                |                                                                                                                                                                                                                                                                                                          | Meets RACT        |
| 1105            | SO <sub>x</sub> | Fluid Catalytic Cracking Units – Oxides of Sulfur<br>(Amended 9/1/84) | RECLAIM BARCT limit:<br><br>Fluid Catalytic Cracking Unit <ul style="list-style-type: none"> <li>5 ppmv (3.25 lbs/thousand barrels feed)</li> </ul>        | Following the U.S. EPA consent decrees, several refineries in the SCAQMD achieved emission levels as low as 25 ppmv (365 day average) and 50 ppmv (7 day avg)<br><br>Other Districts do not have RECLAIM. SCAQMD has set most stringent BARCT for SO <sub>x</sub> sources in the 2010 RECLAIM Amendments | Meets RACT        |

**TABLE D-6**  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                                                        | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                         | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                     | <b>EVALUATION</b>                                                                                               |
|-----------------|-----------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1109            | NO <sub>x</sub> | 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 version) used 5 ppmv for >110 mmbtu/hr and 25 ppmv for units 40-100 mmbtu/hr.                                                                                                                                                                                                                                                      | San Joaquin current Rule 4306 limits are 5 ppmv for refinery units > 110 mmbtu/hr, 25 ppmv for units > 65 mmbtu/hr, 30 ppmv for units < 20 mmbtu/hr. For other units, 9 ppmv (or 6 ppmv) for units >20 mmbtu/hr and 15 ppmv (or 9 ppmv) for units from 5-20 mmbtu/hr.                                                                                                                                                                                           | Rule 2002 is currently being evaluated with targeted NO <sub>x</sub> limits of 2 ppmv for all units > 40 mmbtu. |
| 1110.2          | NO <sub>x</sub> | Emissions from Gaseous and Liquid Fueled Engines (Amended 9/7/12)                                        | <p>Rule 1110.2 has NO<sub>x</sub>, VOC, CO limits for all stationary and portable engines over 50 brake horse power (bhp).</p> <p>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:</p> <ul style="list-style-type: none"> <li>• 11 ppmv NO<sub>x</sub></li> <li>• 30 ppmv VOC</li> <li>• 250 ppmv CO</li> </ul> | <p>San Joaquin Valley Rule 4702 (Amended 8/19/11) has NO<sub>x</sub>, VOC, CO and SO<sub>x</sub> limits for engines rated over 25 bhp.</p> <p>For engines over 50 bhp:</p> <ul style="list-style-type: none"> <li>- By 1/1/2017, the limits for spark-ignited engines are: <ul style="list-style-type: none"> <li>• 11 ppmv NO<sub>x</sub></li> <li>• 250 ppmv VOC (rich-burn) and 750 ppmv VOC (lean burn), and</li> <li>• 2000 ppmv CO</li> </ul> </li> </ul> | Meets RACT                                                                                                      |

**TABLE D-6** (continued)  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| RULE NO.          | TYPE            | RULE TITLE                                                                                   | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EVALUATION |
|-------------------|-----------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1110.2<br>(Cont.) | NO <sub>x</sub> |                                                                                              | <p>Limits for new non-emergency engines driving electrical generators are:</p> <ul style="list-style-type: none"> <li>• 0.07 lbs NO<sub>x</sub> per MW-hr</li> <li>• 0.20 lbs CO per MW-hr</li> <li>• 0.10 lbs VOC per MW-hr</li> </ul> <p>NO<sub>x</sub> limits for low usage biogas engines:</p> <ul style="list-style-type: none"> <li>• 36 ppmv, engines ≥ 500 bhp</li> <li>45 ppmv, engines &lt; 500 bhp</li> </ul> <p>VOC and CO limits for low usage biogas engines:</p> <ul style="list-style-type: none"> <li>• 40 ppmv VOC, landfill gas</li> <li>• 250 ppmv VOC, digester gas</li> <li>• 2000 ppmv CO.</li> </ul> <p>Portable and agricultural engines are not subject to the general limits listed above.</p> <p>Many of Rule 1110.2 engines are in RECLAIM, and RECLAIM will be amended to incorporate feasible BARCT.</p> | <ul style="list-style-type: none"> <li>- 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</li> <li>- In general, all compression ignited engines must meet EPA Tier 4 standards.</li> </ul> <p>Engines between 25 bhp - 50 bhp, non agricultural operations (AO), must meet federal standards 40CFR Part 60 Subpart IIII and JJJJ.</p> <p>The SO<sub>x</sub> 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.</p> |            |
| 1111              | NO <sub>x</sub> | NO <sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Amended 9/5/14) | 40 nanograms per joule heat output until 2015. A lower standard of 14 ng/J is required with staggering compliance dates from 2015-2018.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Meets RACT |

**TABLE D-6 (continued)**  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                                                  | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                            | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                | <b>EVALUATION</b>                                                                                                                                                                                                                       |
|-----------------|-----------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1112            | NO <sub>x</sub> | 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 1/05 version, had no recommendation for cement kiln BARCT. However, RECLAIM BARCT analysis is an on-going process and will be evaluated every three years. | North Central Texas proposes to reduce NO <sub>x</sub> from cement kilns to 80%-85% using technology such as SCR or LoTO <sub>x</sub>                                                                                                                                                                                                                                                                                                      | Rule 2002 is currently being evaluated with targeted NO <sub>x</sub> limits of 0.5 lb/ton clinker pulled.                                                                                                                               |
| 1117            | NO <sub>x</sub> | Emissions of Oxides of Nitrogen from Glass Melting Furnaces (Amended 1/6/84)                       | 4 lb/NO <sub>x</sub> per ton of glass pulled. Flat glass and fiberglass melting furnaces are exempt.<br><br>Many of these R1117 units are in RECLAIM. RECLAIM (Amended 1/05 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 8/17/06) have NO <sub>x</sub> , CO, VOC, SO <sub>x</sub> limits. For NO <sub>x</sub> , 4 lb/ton for container glass and fiberglass and 7 lb/ton - 9 lb/ton for flat glass melting furnaces.<br><br>Since there is a potential to lower the standards through BARCT (e.g. scrubber and SCR), San Joaquin proposes to lower the standards for all glass furnaces in their 2007 AQMP. | Rule 2002 is currently being evaluated with targeted NO <sub>x</sub> limits of <ul style="list-style-type: none"> <li>• 0.5 lb/ton container glass pulled,</li> <li>• 1.28 lb/ton glass pulled in a sodium silicate furnace.</li> </ul> |
| 1121            | NO <sub>x</sub> | Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters (Amended 9/3/04) | 15 ppmv at 3% O <sub>2</sub> , dry input (or 10 ng/j output) for all stationary water heaters; and 55 ppmv at 3% O <sub>2</sub> , 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.                                                                                                                                                                                                                                                        | Meets RACT                                                                                                                                                                                                                              |

**TABLE D-6** (continued)  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                                        | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>EVALUATION</b>                                                                                    |
|-----------------|-----------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 1134            | NO <sub>x</sub> | Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Amended 8/8/97)            | <p>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.</p> <p>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.</p> | <p>Sacramento Rule 413 (Amended 03/24/05) has standards from 9 ppmv – 25 ppmv depending on size of units, but are independent on equipment efficiency.</p> <p>San Joaquin Rule 4703 (Amended 8/17/06) has standards from 5 ppmv – 50 ppmv depending on size of units. Combined cycle units &gt; 10 MW has limit of 3 ppmv. San Joaquin is now proposing to revisit its current rule for further reduction.</p> <p>Ventura Rule 74.9 (Amended 11/08/05) has standards from 25 – 125 ppmv depending on fuel type but are independent from equipment size and efficiency. Control efficiency 90% - 96% control efficiency. In addition, all units have to meet 20 ppmv NH<sub>3</sub>.</p> | Rule 2002 is currently being evaluated with targeted NO <sub>x</sub> limits of 2 ppmv for all units. |
| 1135            | NO <sub>x</sub> | 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 NO <sub>x</sub> per day, or an annual limit of 35 tons per year).                                                                                                                                                                                                                                                                                 | <p>Ventura Rule 59 (amended 7/15/97) requires:</p> <ul style="list-style-type: none"> <li>• 0.1 lb NO<sub>x</sub>/MW-Hr for utility boilers and</li> <li>• 0.04 lb/MW-hr for auxiliary boilers.</li> </ul> <p>San Joaquin Rule 4306 – Phase 3 (amended 3/17/2005) requires</p>                                                                                                                                                                                                                                                                                                                                                                                                          | Rule 2002 is currently being evaluated with targeted NO <sub>x</sub> limits of 2 ppmv for all units. |

**TABLE D-6** (continued)  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| RULE NO.        | TYPE            | RULE TITLE                                                                                                                                       | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EVALUATION      |
|-----------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1135<br>(Cont.) | NO <sub>x</sub> |                                                                                                                                                  | Other utility boilers are in RECLAIM subject to declining NO <sub>x</sub> allocations which were determined based on a level of 7 ppmv (about 0.07 lb/MW-hr assuming a heat rate of 8130 Btu/kw-hr), and are operated at various BARCT levels from 5 ppmv – 30 ppmv.                                                                                                                                                                                                                                                          | boilers more than 20 mmbtu/hr to comply with the following options: <ul style="list-style-type: none"> <li>• Standard option of 9 ppmv (or 0.011 lb/mmbtu) complied by 2005-2007, or</li> <li>• 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.)</li> </ul>                                                                                                                                                                                                                                                                                                               |                 |
| 1146            | NO <sub>x</sub> | Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (Amended 11/1/2013) | Applicable to units rating of more than 5 mmbtu/hr.<br><br>Current NO <sub>x</sub> limits: <ul style="list-style-type: none"> <li>• For digester gas: 15 ppmv</li> <li>• For landfill gas: 25 ppmv</li> <li>• For refinery gas: 30 ppmv (the 2008 amendment did not revise limits for refinery gas)</li> <li>• For other types of fuels: 5 ppmv for <math>\geq 75</math> mmbtu/hr, natural gas; 30 ppmv for <math>\geq 75</math> mmbtu/hr, other fuels; and 5 or 9 ppmv for 20–75 mmbtu/hr units</li> </ul> CO limit: 400ppmv | 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: NO <sub>x</sub> limits: <ul style="list-style-type: none"> <li>• 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</li> <li>• For other types of fuels: 9 ppmv for <math>&gt;20</math> mmbtu/hr units; 15 ppmv for <math>\leq 20</math> mmbtu/hr units (6 – 9 ppmv for enhanced options)</li> <li>• Other units: 15 – 30 ppmv CO limit: 400 ppmv.</li> </ul> | RACT Equivalent |

**TABLE D-6 (continued)**  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b> | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                       | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>EVALUATION</b> |
|-----------------|-----------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1146<br>(Cont.) | NO <sub>x</sub> |                   | <p>Many Rule 1146 units are in RECLAIM. RECLAIM (Amended 1/05 version) contains the following NO<sub>x</sub> limits:</p> <ul style="list-style-type: none"> <li>For refinery gas:<br/>5 ppmv for units &gt; 110 mmbtu/hr; and 25 ppmv for units &lt; 110 mmbtu/hr units</li> <li>For other units:<br/>9 ppmv for units &gt; 20 mmbtu/hr; and 12 ppmv for units ≥ 5 mmbtu/hr</li> </ul> | <p>San Joaquin Valley further reduces NO<sub>x</sub>, CO, SO<sub>2</sub> and PM<sub>10</sub> emissions by adopting Rule 4320 on 10/16/08. The limits in Rule 4320 are:</p> <p>NO<sub>x</sub> limits:</p> <ul style="list-style-type: none"> <li>For refinery gas:<br/>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.</li> <li>For oil field generators:<br/>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</li> <li>For low usage units: 9 ppmv</li> <li>For units at a wastewater treatment facilities firing on less than 50% by vol PUC quality gas: 9 ppmv</li> <li>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</li> </ul> |                   |

**TABLE D-6** (continued)  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                                                                                                        | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>EVALUATION</b> |
|-----------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1146<br>(Cont.) | NO <sub>x</sub> |                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Compliance may be mitigated with annual emission fees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |
| 1146.1          | NO <sub>x</sub> | Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters<br>(Amended 11/1/13) | <p>Applicable to units rating from 2 mmbtu/hr to 5 mmbtu/hr.</p> <p>NO<sub>x</sub> limits:</p> <ul style="list-style-type: none"> <li>• Atmospheric Units: 12 ppmv</li> <li>• Digester gas: 15 ppmv</li> <li>• Landfill gas: 25 ppmv</li> <li>• All others: 9 ppmv</li> </ul> <p>CO limit: 400 ppmv.</p> <p>Many Rule 1146.1 units are in RECLAIM, and RECLAIM (Amended 1/05 version) BARCT analysis recommended 12 ppmv for less than 5 mmbtu/hr units based on ultra low NO<sub>x</sub> technology that is achieved in practice.</p> <p>RECLAIM (Amended in 2005) has a limit of 12 ppmv NO<sub>x</sub> for boilers in this size range.</p> | <p>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.</p> <p>San Joaquin Rule 4307 (Amended 5/19/2011) has the following limits:</p> <p>NO<sub>x</sub> limits:</p> <p>For New or Replacement Units:<br/>         Atmospheric Units: 12 ppmv, and<br/>         Non-Atmospheric Units: 9 ppmv</p> <p>-For Retrofit Units: 30 ppmv burning gaseous fuels; and 40 ppmv burning liquid fuels</p> <p>Sulfur limits for SO<sub>2</sub>:</p> <p>-For natural gas, propane, butane, or LPG: 5 grains of total sulfur per 100 scf, or 9 ppmv SO<sub>2</sub>, or 95% control</p> <p>-For liquid fuels: 15 ppmv sulfur</p> | RACT Equivalent   |

**TABLE D-6** (continued)  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| RULE NO. | TYPE            | RULE TITLE                                                                                  | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                           | EVALUATION                                                                                                                                                                                                                                                                                                                                     |
|----------|-----------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1146.2   | NO <sub>x</sub> | Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers (Amended 5/5/06) | <p>Applicable to units less than 2 mmbtu/hr.</p> <p>Current limits are:</p> <ul style="list-style-type: none"> <li>• 20 ppmv for units from 400,000 btu/hr – 2 mmbtu/hr</li> <li>• 55 ppmv for units rating less than 400,000 btu/hr</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>San Joaquin Valley Rule 4308, (Amended 11/14/13) requires:</p> <ul style="list-style-type: none"> <li>• 20 ppmv for units used PUC gas from 75,000 btu/hr – 2 mmbtu/hr</li> <li>• 30 ppmv for units from 400,000 btu/hr - 2 mmbtu/hr used other types of fuels</li> <li>• 77 ppmv for units rating from 75,000 btu/hr – 400,000 btu/hr used other types of fuels</li> </ul> | Meets RACT                                                                                                                                                                                                                                                                                                                                     |
| 1147     | NO <sub>x</sub> | NO <sub>x</sub> Emissions from Miscellaneous Sources (Amended 9/9/11)                       | <p>Current limits are:</p> <p>Gas Fired Equipment:</p> <ul style="list-style-type: none"> <li>• 60 ppmv for units operating at temperatures <math>\geq 1200^{\circ}\text{F}</math></li> <li>• 30 or 60 ppmv for units operating at temperatures <math>&lt; 1200^{\circ}\text{F}</math>.</li> <li>• 40 ppmv for asphalt</li> </ul> <p>Liquid Fuel fired Equipment:</p> <ul style="list-style-type: none"> <li>• 40 ppmv for units operating at temperatures <math>&lt; 1200^{\circ}\text{F}</math></li> <li>• 60 ppmv for units operating at temperatures <math>\geq 1200^{\circ}\text{F}</math></li> <li>• Units less than 1 lb/day compliance delayed until 2017</li> </ul> <p>Mitigation fee option for delayed compliance for multiple units</p> | <p>San Joaquin Valley APCD Rule 4309 (2005) equivalent for asphalt.</p> <p>40 ppmv for ovens, dehydrators and dryers with no temperature stratification</p>                                                                                                                                                                                                                    | <p>RACT Equivalent</p> <p>Cooking ovens, dry roasters removed from rule applicability to new Rule 1153.1 (11/7/14)</p> <p><u>SCAQMD Rule 1147 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1147 is as stringent as or more stringent than the other Districts' rules.</u></p> |

**TABLE D-6** (continued)  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                                    | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b> | <b>EVALUATION</b> |
|-----------------|-----------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------|
| 1153.1          | NO <sub>x</sub> | Emissions of Oxides of Nitrogen from Commercial Food Ovens<br>(Adopted 11/7/14)      | <ul style="list-style-type: none"> <li>• 40 ppmv for units operating at temperatures &lt; 500 ° F</li> <li>• 60 ppmv for units operating at temperatures ≥ 500 ° F</li> <li>• CO capped at 800 ppmv</li> <li>• Exemption &lt; 1 lb/day and low use sources</li> <li>• 20 year equipment life</li> <li>• Mitigation fee for alternate compliance plan</li> </ul> |                                                                                             | Meets RACT        |
| 1159            | NO <sub>x</sub> | Nitric Acid Units – Oxides of Nitrogen<br>(Amended 12/6/85)                          | <ul style="list-style-type: none"> <li>• 450 ppmv 15 min avg, or</li> <li>• 237 ppmv, 60 min avg; or</li> <li>• 3 lbs/ton acid produced, 60 min average.</li> </ul>                                                                                                                                                                                             |                                                                                             | Meets RACT        |
| 1191            | All             | Light and Medium Duty Fleet Vehicles<br>(Amended 6/16/00)                            | Require public fleet to acquire new low emitting gasoline or alternative fuel light and medium duty vehicles.                                                                                                                                                                                                                                                   |                                                                                             | Meets RACT        |
| 1192            | All             | Clean On-Road Transit Buses<br>(Amended 6/16/00)                                     | Require public fleet to acquire new low emitting or alternative fuel heavy duty vehicles.                                                                                                                                                                                                                                                                       |                                                                                             | Meets RACT        |
| 1193            | All             | Clean On-Road Residential /Commercial Refuse Collection Vehicles<br>(Amended 7/9/10) | Acquire new low emitting refuse collection vehicles.                                                                                                                                                                                                                                                                                                            |                                                                                             | Meets RACT        |

**TABLE D-6 (concluded)**  
**Evaluation of SCAQMD NO<sub>x</sub> Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>       | <b>RULE TITLE</b>                                      | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                    | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                           | <b>EVALUATION</b>                                                          |
|-----------------|-------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 1194            | All               | Commercial Airport Ground Access<br>(Amended 10/20/00) | Acquire new low emitting vehicles that are used for passenger transportation in/out airports.                                                                                       |                                                                                                                                                                                       | Meets RACT                                                                 |
| 1195            | All               | Clean On-Road School Buses<br>(Amended 5/5/06)         | Acquire new low emitting school buses.                                                                                                                                              |                                                                                                                                                                                       | Meets RACT                                                                 |
| 2002            | NO <sub>x</sub> , | RECLAIM<br>(Amended 11/5/10)                           | Include facility allocations for NO <sub>x</sub> for RECLAIM facilities                                                                                                             | Other Districts do not have RECLAIM, refer to individual rules such as Rule 1146, 1146.1, 1110.2 etc.                                                                                 | BARCT review currently underway.<br><br>Rule Forecast: Second Quarter 2015 |
| 444             | NO <sub>x</sub>   | Open Burning<br>(Amended 7/12/13)                      | Contains requirements and prohibitions for open burning to minimize emissions and smoke impacts to the public.                                                                      | San Joaquin Valley Rule 4103 (Amended 4/15/10) contains additional best management practices compared to Rule 444 such as best management practices to control open burning of weeds. | Meets RACT                                                                 |
| 445             | NO <sub>x</sub>   | Wood Burning Devices<br>(Amended 5/3/13)               | Contains requirements for wood burning devices to minimize emissions and smoke impacts to the public.<br><br>Restrictis burning during the forecasted episodic curtailment periods. | San Joaquin Valley Rule 4901 (Amended 9/18/14) comparable to Rule 445.                                                                                                                | Meets RACT                                                                 |

**TABLE D-7**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                             | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                             | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                     | <b>EVALUATION</b> |
|-----------------|-------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1102            | VOC         | Petroleum Solvent Dry Cleaners (Amended 11/17/00)             | Maximum usage 15 gals per month and various equipment specifications and operating requirements. Exemptions provided for certain types of dry cleaning provided that detergents and additives must be less than 50 g/L VOC.                  |                                                                                                                                                                                                                 | Meets RACT        |
| 1103            | VOC         | Pharmaceuticals and Cosmetics Manufacturing (Amended 3/12/99) | For reactors, distillation columns, crystallizers, or centrifuges: 15 lbs/day VOC or use surface condensers. For air dryers: 90% control efficiency or 33 lbs/day VOC. Also include other various operating requirements.                    |                                                                                                                                                                                                                 | Meets RACT        |
| 1104            | VOC         | Wood Flat Stock Coating Operation (Amended 8/13/99)           | 2.1 lbs/gal, less water and exempt solvent. In lieu of VOC limit, use control device having 95% control efficiency (or 50 ppmv outlet) and 90% collecting efficiency                                                                         |                                                                                                                                                                                                                 | Meets RACT        |
| 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 9/11/12) 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) | Meets RACT        |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO.        | TYPE | RULE TITLE                                              | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                      | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                     | EVALUATION                                                                                                                                                                                                                                         |
|-----------------|------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1106<br>(Cont.) |      |                                                         |                                                                                                                                                                                                                                                                                                                | 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)                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| 1106.1          | VOC  | Pleasure Craft Coating Operations<br>(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.)                                                                     | <u>RACT Equivalent</u><br><br><u>SCAQMD Rule 1106.1 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1106.1 is as stringent as or more stringent than the other Districts' rules.</u> |
| 1107            | VOC  | Coating of Metal Parts and Products<br>(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 4/8/08) generally has the same coating-specific limits as South Coast Rule 1107, except in the following categories:<br><br><ul style="list-style-type: none"> <li>• Limit for metallic coating is 3 lbs/gal (3.5 lbs/gal in Rule 1107);</li> <li>• Limit for camouflage is 3 lbs/gal (3.5 lbs/gal in Rule 1107);</li> </ul> | <u>RACT Equivalent</u><br><br><u>SCAQMD Rule 1107 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1107 is as stringent as or more stringent than the other Districts' rules.</u>     |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                 | <b>CURRENT RULE REQUIREMENTS</b>                                                                                          | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                               | <b>EVALUATION</b> |
|-----------------|-------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1107<br>(Cont.) | VOC         |                                                                   |                                                                                                                           | <ul style="list-style-type: none"> <li>Limit of pretreatment coatings is 2.3 lbs/gal (3.5 lbs/gal in Rule 1107)</li> <li>Overall minimum control efficiency is 90%, higher than Rule 1107 requirement at 85%</li> </ul> <p>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)</p> |                   |
| 1108            | VOC         | Cutback Asphalt (Amended 2/1/85)                                  | 0.5% by volume VOC evaporated at 500 degrees F.                                                                           | Ventura Rule 74.28 – Asphalt Roofing Operations (Adopted 5/10/94) has work practice requirements for asphalt roofing operations. South Coast does not have a similar rule.                                                                                                                                                                                                                                | Meets RACT        |
| 1108.1          | VOC         | Emulsified Asphalt (Amended 11/4/83)                              | 3% by volume VOC evaporated at 500 degrees F                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                           | Meets RACT        |
| 1110.2          | VOC         | Emissions from Gaseous and Liquid Fueled Engines (Amended 9/7/12) | Rule 1110.2 has NO <sub>x</sub> , VOC, CO limits for all stationary and portable engines over 50 brake horse power (bhp). | San Joaquin Valley Rule 4702 (Amended 11/14/13) has NO <sub>x</sub> , VOC, CO and SO <sub>x</sub> limits for engines rated over 25 bhp.                                                                                                                                                                                                                                                                   | Meets RACT        |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b>   | <b>TYPE</b> | <b>RULE TITLE</b> | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>EVALUATION</b> |
|-------------------|-------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1110.2<br>(Cont.) | VOC         |                   | <ul style="list-style-type: none"> <li>• 11 ppmv NO<sub>x</sub></li> <li>• 30 ppmv VOC</li> <li>• 250 ppmv CO</li> </ul> <p>Limits for new non-emergency engines driving electrical generators are:</p> <ul style="list-style-type: none"> <li>• 0.07 lbs NO<sub>x</sub> per MW-hr</li> <li>• 0.20 lbs CO per MW-hr</li> <li>• 0.10 lbs VOC per MW-hr</li> </ul> <p>NO<sub>x</sub> limits for low usage biogas engines:</p> <ul style="list-style-type: none"> <li>• 36 ppmv, engines ≥ 500 bhp</li> <li>45 ppmv, engines &lt; 500 bhp</li> </ul> <p>VOC and CO limits for low usage biogas engines:</p> <ul style="list-style-type: none"> <li>• 40 ppmv VOC, landfill gas</li> <li>• 250 ppmv VOC, digester gas</li> <li>• 2000 ppmv CO.</li> </ul> <p>Portable and agricultural engines are not subject to the general limits listed above.</p> <p>Many of Rule 1110.2 engines are in RECLAIM, and RECLAIM will be amended to incorporate feasible BARCT.</p> | <ul style="list-style-type: none"> <li>• 250 ppmv VOC (rich-burn) and 750 ppmv VOC (lean burn), and</li> <li>• 2000 ppmv CO</li> </ul> <p>- 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</p> <p>- In general, all compression ignited engines must meet EPA Tier 4 standards.</p> <p>Engines between 25 bhp - 50 bhp, non agricultural operations (AO), must meet federal standards 40CFR Part 60 Subpart IIII and JJJJ.</p> |                   |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                       | CURRENT RULE REQUIREMENTS                                                                                                                                                               | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                          | EVALUATION                                                                                                                                                                                                                                                              |
|----------|------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1113     | VOC  | Architectural Coatings (Amended 9/6/13)                          | Coating-specific emission limits from 50 g/L – 730 g/L. Allow averaging, scheduled to be phased out on January 1, 2015. Exempt containers with capacity 2 fluid oz or less.             |                                                                                                                                                                                                                               | Meets RACT                                                                                                                                                                                                                                                              |
| 1114     | VOC  | Petroleum Refinery Coking Operations (Adopted 5/3/13)            | A delayed coking unit shall depressurize each coke drum to less than two (2) pounds per square inch, gauge (psig) prior to venting it to atmosphere                                     |                                                                                                                                                                                                                               | Meets RACT                                                                                                                                                                                                                                                              |
| 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                                                                       | <u>Rule 1115 is not as stringent as the 2008 EPA CTGs for a few coating processes for facilities emitting &gt; 15 lbs/day. The two facilities subject to Rule 1115 have a small emission inventory of about 0.02 tpd. Staff will commit to further rule evaluation.</u> |
| 1122     | VOC  | Solvent Degreasers (Amended 5/1/09)                              | Contain various work practice and design requirements.                                                                                                                                  |                                                                                                                                                                                                                               | Meets RACT                                                                                                                                                                                                                                                              |
| 1123     | VOC  | Refinery Process Turnarounds (Amended 12/7/90)                   | Vent to storage areas or gas disposal system until pressure in the vessel is below 5 psig or within 5% above the minimum gauge pressure at which the vapors can be collected.           | San Joaquin Rule 4454 requires control (vapor recovery and combustion) and depressurization to less than 5 psig. San Joaquin 2007 AQMP control measure proposes to further study the inventory associated with this category. | Meets RACT                                                                                                                                                                                                                                                              |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                                     | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                         | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | EVALUATION                                                                                                                                                                                                                                     |
|----------|------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1124     | VOC  | Aerospace Assembly and Component Manufacturing Operations<br>(Amended 9/21/01) | <p>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.</p> <p>Solvent cleaning operations must comply with Rule 1171.</p> | <p>San Joaquin Valley Rule 4605 (Amended 6/16/11) has the following limits that are more stringent than those in Rule 1124:</p> <ul style="list-style-type: none"> <li>• Flight Test Coatings = 600 g/L (<u>420 g/l for used on missiles and single use target craft, 840 g/L for other flight test coatings in Rule 1124</u>)</li> <li>• Fastener Sealant = 600 g/L (<u>675 g/L for fastener sealant and 600 g/L for other sealants in Rule 1124</u>)</li> </ul> <p>Sacramento Rule 456 (Amended 10/23/08) has the following limits that are more stringent than those in Rule 1124:</p> <ul style="list-style-type: none"> <li>• Conformal Coating = 600 g/L (Rule 1124 limit is 750 g/L)</li> <li>• Fire Resistant Coatings = 600 g/L. (Rule 1124 limits are 650 g/L for Commercial; 800 g/L for Military)</li> <li>• High-Temperature Coating = 420 g/L. (Rule 1124 limit is 850 g/L)</li> <li>• Mold Release Coatings = 762 g/L. (Rule 1124 limit is 780 g/L)</li> </ul> | <p>RACT equivalent</p> <p><u>SCAQMD Rule 1124 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1124 is as stringent as or more stringent than the other Districts' rules.</u></p> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO.        | TYPE | RULE TITLE | CURRENT RULE REQUIREMENTS | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EVALUATION |
|-----------------|------|------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1124<br>(con't) | VOC  |            |                           | <ul style="list-style-type: none"> <li>• Radiation Effect = 600 g/L. (Rule 1124 limit is 800 g/L)</li> <li>• Rain Erosion Resistant Coating = 600 g/L in All Other Category. (Rule 1124 limit is 800 g/L)</li> </ul> <p><u>SCAQMD Rule 1124 has more detailed breakdown of specialty coating categories (primers, coating, adhesives, sealants, maskants, lubricants, cleaning solvents and strippers) than Sacramento Rule 456. A total of 43 sub-categories (27 in Rule 456) was listed in Rule 1124, and most of them are as stringent as, or more stringent than the analogous requirements in Rule 456. For example, Rule 456's VOC limit is 622 and 160 g/l for Type I and Type II chemical milling maskants (250 and 160 g/l for SCAQMD) and 850 g/l for other maskants (varying from 250 to 850 g/l for different sub-categories in SCAQMD).</u></p> <p><u>Ventura Rule 74.13 (Amended 9/11/12) requires 200 g/L VOC limit for solvent cleaning or 25 mmHg vapor pressure allowance.</u></p> |            |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                             | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                             | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | EVALUATION                                                                                                                                                                                                                                                                                                                                        |
|----------|------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1125     | VOC  | Metal Container, Closure, and Coil Coating Operations (Amended 3/7/08) | 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. | <p>The following limit in San Joaquin Rule 4604 (Amended 9/20/07) are more stringent than those in Rule 1125:</p> <ul style="list-style-type: none"> <li>• Two-Piece Interior Body Spray = 420 g/L (440 g/L in Rule 1125)</li> <li>• Three-Piece Interior Body Spray = 360 g/L (510g/L in Rule 1125)</li> </ul> <p>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:</p> <ul style="list-style-type: none"> <li>• Two-Piece Interior Body Spray = 420 g/L (440 g/L in Rule 1125)</li> <li>• Three-Piece Interior Body Spray = 360 g/L (510g/L in Rule 1125)</li> </ul> | <p>Meets RACT</p> <p><u>SCAQMD Rule 1125 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1125 is as stringent as or more stringent than the other Districts' rules.</u></p> <p><u>Rule 1125 was amended in 2008 to increase control efficiency of treatment systems to 95%.</u></p> |
| 1126     | VOC  | Magnet Wire Coating Operations (Amended 1/13/95)                       | Coating-specific emission limits less than 200 g/L, or use control equipment to achieve equivalent reduction. Solvent cleaning operations must comply with Rule 1171.                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Meets RACT</p> <p><u>(EPA determination 2007)</u></p>                                                                                                                                                                                                                                                                                          |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                 | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                 | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                              | EVALUATION                                                                                                                                                                                                                                                                                                                                              |
|----------|------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1127     | VOC  | Emission Reductions from Livestock Waste (Adopted 8/6/04)  | <p>Good housekeeping practices.</p> <p>Note: The SCAQMD just adopted Rule 223 in June 2006 to reduce emission for large confined animal facilities. Rule 223 includes series of good management practices that are more stringent than Rule 1127.</p>                                                                                                                     | <p>Sacramento Rule 496 – Large Confined Animal Facilities (Adopted 8/24/06), has more stringent control and good management practices than South Coast Rule 1127 (e.g. venting to control system with at least 80% control efficiency).</p> <p>In the 2007 AQMP, San Joaquin Valley proposed to increase the number of good management practices and control efficiency as called for in their existing rule.</p> | <p>Meets RACT</p> <p><u>Rule 1127 and 223 together are as stringent as other Districts' rules.</u></p>                                                                                                                                                                                                                                                  |
| 1128     | VOC  | Paper, Fabric and Film Coating Operations (Amended 3/8/96) | <p>Coating-specific emission limits from 20 – 265 g/L. Specific high transfer coating applications (e.g. HVLP spray). Alternatively, operator can also use control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must contain 15% or less VOC or 85% VOC must be collected and disposed of.</p> | <p>Midwest RPO proposes 100% capture and 90% - 95% control efficiency for existing sources and 97% for new/reconstructed sources.</p>                                                                                                                                                                                                                                                                             | <p><u>RACT equivalent</u></p> <p><u>District rule is more stringent than the 2007 EPA CTG.</u></p> <p>The incremental increase from 85% to 90%-97% in control efficiency is not cost-effective for the existing sources in the South Coast air basin.<sup>(note)</sup></p> <p><u>Note: Per communication with Bill Milner on February 13, 2007.</u></p> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                       | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EVALUATION                                                                                                              |
|----------|------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 1130     | VOC  | Graphic Arts<br>(Amended 5/2/14) | <p>VOC content limits: 16 g/l – 185 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 90% - 95% can be used to achieve equal or better emission reductions.</p> <p>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.)</p> <p>Rule 1130 was recently amended to reduce fountain solution VOC content to between 16-85 g/L with optional control device efficiency of 90-95%. The rule meets current CTG specifications.</p> | <p>The U.S. EPA CTG for lithographic and letterpress, September 2006, recommends:</p> <ul style="list-style-type: none"> <li>• Destruction efficiency of 90% to 95% depending on the date of installation (or 20 ppmv VOC outlet concentration) for heat-set web offset presses with potential to emit, prior to controls, of at least 25 tpy.</li> <li>• For all operations emitting 15 lb/day, requirements for fountain solution are: <ul style="list-style-type: none"> <li>• 1.6% by weight alcohol or less as applied, or 3% if refrigerated chiller is used, or 5% alcohol substitute for heat-set web presses;</li> <li>• 5% alcohol for sheet-fed presses;</li> <li>• 5% alcohol substitute and no alcohol in fountain solution for cold-set web presses.</li> </ul> </li> </ul> | <p>Meets RACT</p> <p><u>SCAQMD Rule 1130 was recently amended (05/02/14) and is equivalent to CTG requirements.</u></p> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b> | <b>CURRENT RULE REQUIREMENTS</b> | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>EVALUATION</b> |
|-----------------|-------------|-------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1130<br>(Cont.) |             |                   |                                  | <p>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.</p> <p>Ventura Rule 74.19 (Amended 6/14/11) requires low VOC content in fountain solution used in lithographic presses.</p> <p>In addition, the U.S. EPA CTG for lithographic and letterpress, September 2006, recommends:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• For operations emitting 15 lb/day, fountain solution must be 1) 1.6% alcohol or less, or</li> </ul> |                   |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO.        | TYPE | RULE TITLE                                    | CURRENT RULE REQUIREMENTS                                                                                                                                                                                    | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                   | EVALUATION                                                                                                                                                                                                                                    |
|-----------------|------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1130<br>(Cont.) |      |                                               |                                                                                                                                                                                                              | <p>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.</p> <p>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.</p> |                                                                                                                                                                                                                                               |
| 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%. | <p>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).</p> <p>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)</p>                             | <p>Meets RACT</p> <p><u>SCAQMD Rule 1130.1 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1130.1 is as stringent as or more stringent than the other Districts' rules.</u></p> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                                                                                                                            | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                        | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b> | <b>EVALUATION</b> |
|-----------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------|
| 1131            | VOC         | Food Product Manufacturing and Processing Operations (Amended 6/6/03)                                                                                                        | VOC content limits from 120 – 200 g/L, or air pollution control system with at least 95% control efficiency and 90% capture efficiency. Solvent cleaning operations must contain 15% or less VOC or 85% VOC must be collected and disposed of.                                          |                                                                                             | Meets RACT        |
| 1132            | VOC         | Further Control of VOC from High Emitting Spray Booths (Amended 5/5/06)                                                                                                      | 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.                                                                                                  |                                                                                             | Meets RACT        |
| 1133, 1133.1    | VOC         | Rule 1133 - Composting and Related Operations – General Administrative Requirements (Adopted 1/10/03)<br><br>Rule 1133.1 – Chipping and Grinding Activities (Amended 7/8/11) | 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 NH <sub>3</sub> /ton throughput. |                                                                                             | Meets RACT        |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                               | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                          | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | EVALUATION                                                                                                                                                                                                                                     |
|----------|------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. | <p>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. <u>Rule 74.30 has higher emissions limits for refinishing operations.</u></p> <p>San Joaquin Valley Rule 4606 (Amended 10/16/08) is more stringent in the following areas:</p> <ul style="list-style-type: none"> <li>• 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;</li> </ul> <p>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. <u>Rule 4606 exempts refinishing, replacement, and custom Replica Furniture Operations.</u></p> <p><u>SCAQMD Rule 1136 also has a VOC limit of 120 g/L for low-stain barrier coat. This category is</u></p> | <p>RACT Equivalent</p> <p><u>SCAQMD Rule 1136 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1136 is as stringent as or more stringent than the other Districts' rules.</u></p> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO.        | TYPE | RULE TITLE                                                                                 | CURRENT RULE REQUIREMENTS                                      | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EVALUATION |
|-----------------|------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1136<br>(con't) | VOC  |                                                                                            |                                                                | <p><u>not found in SJV/Ventura and it is lower than their general limits.</u></p> <p>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. <u>Solvent cleaning operations and the storage and disposal of VOC containing materials are subject to Rule 1171 (general limit = 0.21 lbs/gal) in SCAQMD. Bay Area has higher emission limit of clear topcoat (4.6 lbs /gal vs. 2.3 lbs/gal in SCAQMD) for custom furniture Bay Area exempts refinishing, replacement, and custom Replica Furniture Operations.</u></p> |            |
| 1141            | VOC  | Control of Volatile Organic Compound Emissions from Resin Manufacturing (Amended 11/17/00) | 95% - 98% control or 0.12 – 0.5 lbs/1000 lbs of resin produced |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Meets RACT |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                    | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                  | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b> | <b>EVALUATION</b> |
|-----------------|-------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------|
| 1141.1          | VOC         | Coatings and Ink Manufacturing (Amended 11/17/00)                    | Operational work practices                                                                                                                                                                                                                        |                                                                                             | Meets RACT        |
| 1142            | VOC         | Marine Tank Vessel Operations (Amended 7/19/91)                      | 2 lbs/1000 barrels liquid loaded or 95% emissions reduced                                                                                                                                                                                         |                                                                                             | Meets RACT        |
| 1141.2          | VOC         | Surfactant Manufacturing (Amended 1/11/02)                           | 95% control or 0.5 lbs/1000 lbs of surfactant produced                                                                                                                                                                                            |                                                                                             | Meets RACT        |
| 1143            | VOC         | Consumer Paint Thinners and Multi-purpose Solvents (Amended 12/3/10) | Set VOC content of 25 g/l for consumer paint thinner and multi-purpose solvent beginning 1/1/2011                                                                                                                                                 |                                                                                             | Meets RACT        |
| 1144            | VOC         | Metalworking Fluids and Direct-contact Lubricants (Amended 7/9/10)   | Various limits from 50 g/L – 340 g/L. Add-on control at 90% capture efficiency, 95% control efficiency (or 5 ppmv outlet)                                                                                                                         |                                                                                             | Meets RACT        |
| 1145            | VOC         | Plastic, Rubber, Leather and Glass Coatings (Amended 12/4/2009)      | VOC limits: 50–800 lbs VOC per gallon. Avg provisions and add-on control at 95% control efficiency (50 ppmv outlet), 90% capture efficiency. High transfer coating equipment (e.g. HVLP). Solvent cleaning operations must comply with Rule 1171. |                                                                                             | Meets RACT        |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO.        | TYPE | RULE TITLE                                                 | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                          | EVALUATION                                                                                                                          |
|-----------------|------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 1145<br>(Cont.) |      |                                                            | VOC limits: 50–800 lbs VOC per gallon. Avg provisions and add-on control at 95% control efficiency (50 ppmv outlet), 90% capture efficiency. High transfer coating equipment (e.g. HVLP). Solvent cleaning operations must comply with Rule 1171.                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                               |                                                                                                                                     |
| 1148            | VOC  | Thermally Enhanced Oil Recovery Wells<br>(Amended 11/5/82) | 4.5 lbs/day or less per well                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                               | Meets RACT                                                                                                                          |
| 1148.1          | VOC  | Oil and Gas Production Wells<br>(Amended 3/5/04)           | <ul style="list-style-type: none"> <li>Set limits for total TOC of 500 ppm in well cellar;</li> <li>Requires well head liquid capture;</li> <li>limits the storage of organic liquids in the well cellar but conditionally allows TOC emissions with control equipment less than 250 ppm for safety considerations</li> <li>sets requirement for operations at the well head.</li> <li>Requires 95% control equipment efficiency for natural gas vented to atmosphere</li> </ul> | Glycol dehydrators in gas and oil production regulated by VCAPCD's Rule 71.5 are jointly regulated by SCAQMD Rules 1148.1 and Rule 1173 (Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants) which meet RACT | Rule currently being evaluated for amendments <del>in conjunction with Proposed Rule 1148.2</del> for further <u>VOC reduction.</u> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                          | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                   | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EVALUATION             |
|----------|------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1149     | VOC  | Storage Tank Degassing (Amended 5/2/08)                             | Degassing operations must be controlled <u>such that the VOC concentration within the tank is reduced to less than 5,000 ppmv by control equipment achieving 90% efficiency</u> for a minimum time limit estimated in the rule based on volume of the gas to be freed in the tank and the flow rate through control device. | <p>Ventura Rule 74.26, 74.27 (Adopted 10/12/04) requires degassing of crude oil, gasoline and other high TVP liquid storage tanks be controlled by vapor recovery or flare having 95% control efficiency until the vapor concentration in the tanks is less than 10,000 ppmv.</p> <p>Bay Area Rule 8-10 (Adopted 1/21/04) sets requirements for depressurizing process vessels at petroleum refineries and chemical plants. The gases must be vented to control devices until the vapor concentration in the tanks is less than 10,000 ppmv.</p> <p>Rule development is in progress at San Joaquin to eliminate exemptions and require more stringent VOC control.</p> | <u>RACT Equivalent</u> |
| 1150.1   | VOC  | Control of Gaseous Emissions from Active Landfills (Amended 4/1/11) | 98% control or 20 ppmv non methane organic compounds. 50-500 ppmv total organic compounds above background                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Meets RACT             |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                                               | CURRENT RULE REQUIREMENTS                                                                                                                                                                                       | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | EVALUATION                                                                                                                                                                                                                                        |
|----------|------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1151     | VOC  | Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (Amended 9/5/14) | 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. | <p><u>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) and 2) truck bed liner coating at 200 g/L (310 g/L in Rule 1151)</u></p> <p>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)</p> <p>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.</p> | <p><u>RACT Equivalent</u></p> <p><u>SCAQMD Rule 1151 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1151 is as stringent as or more stringent than other Districts' rules.</u></p> |
| 1153     | VOC  | Commercial Bakery Ovens (Adopted 1/13/95)                                                | Emission reduction of 70% or more is required for existing ovens emitting between 50 lbs – 100 lbs VOC/day, 95% or more for ovens emitting more than 100 lbs/day, and 95% or more for new ovens.                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Meets RACT                                                                                                                                                                                                                                        |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                                         | CURRENT RULE REQUIREMENTS                                                                                                                        | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | EVALUATION                                                                                                                                                                                                                       |
|----------|------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u>RACT Equivalent</u><br><del>Meets RACT</del>                                                                                                                                                                                  |
| 1164     | VOC  | Semiconductor Manufacturing (Amended 1/13/95)                                      | VOC limit for cleanup solvents is 200 g/L or low vapor pressure of 0.64 psia at 68 degree F. Photoresist applications must be vented to control. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Meets RACT                                                                                                                                                                                                                       |
| 1166     | VOC  | Volatile Organic Compound Emissions from Decontamination of Soil (Amended 5/11/01) | Good management practices.                                                                                                                       | Ventura Rule 74.29 – Soil Decontamination Operations (Amended 4/8/08) has standards for soil decontamination (e.g. 50 - 100 ppmv ). <u>Leaking agricultural tanks is exempted.</u><br>Bay Area Rule 8-40 (Amended 6/15/05) for soil decontamination and tank degassing. All vapor <u>exceeding the specified limit based on organic content and aeration rate</u> must be vented to control devices with $\geq 90\%$ efficiency until meeting 5,000 ppmv.<br>San Joaquin Valley <u>Rule 4651 (Amended 9/20/07) employs good management practices similar to those in SCAQMD. For ex-situ decontamination, VOC emissions must be vented to control devices with 95% efficiency or more.</u> | <u>RACT Equivalent</u><br><br><u>There is no federal policy or guidance describing RACT for this source category</u><br><br><u>Rule 1166 is included in the 2007 RACT/RACM demonstration that was approved by USEPA in 2011.</u> |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                         | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                    | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                        | 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.                                                                                                                                                                                     | <p>San Joaquin Valley Rule 4653 (Amended 9/16/10) has more stringent limits in the following areas:</p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• Minimum overall control efficiency is 85% (80% in Rule 1168)</li> </ul> | Staff has completed its evaluation and is proposing to reduce primer VOC limits to 250 g/L to meet the CTG. <del>Additional VOC reductions to emissions limits are proposed that will exceed RACT. The Rule is expected to be considered 1<sup>st</sup> quarter 2015.</del> |
| 1171     | VOC  | Solvent Cleaning Operations (Amended 5/1/09)       | 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. <del>The rule however only requires (70%)(95%) = 66.5% overall control efficiency for graphic arts and screen printing applications</del> | 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.                                                                                                                                                                      | Meets RACT                                                                                                                                                                                                                                                                  |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                 | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>EVALUATION</b> |
|-----------------|-------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1173            | VOC         | Fugitive Emissions of Volatile Organic Compounds (Amended 2/6/09) | <ul style="list-style-type: none"> <li>Require to connect atmospheric PRDs to vapor recovery or add-on control by first turnaround, if the facility experiences:               <ul style="list-style-type: none"> <li>a second release of more than 500 lbs VOC within any five year period, or</li> <li>any release of 2,000 lbs VOC in any 24 hour period.</li> </ul> </li> <li>In lieu of connecting PRDs to control, operator may elect to pay mitigation fee of \$350,000 for any release exceeding the threshold.</li> <li>Leak Detection and Repair (LDAR) program to reduce fugitive emissions. Leak thresholds are:               <ul style="list-style-type: none"> <li>for light liquid/gas/vapor service &gt;10,000 ppmv,</li> <li>for PRDs &gt;200 ppmv,</li> <li>for pumps in heavy liquid &gt;100 ppmv</li> </ul> </li> </ul> | <p>Bay Area Rule 8-28 (amended 12/21/05) requires atmospheric PRDs to be:</p> <ul style="list-style-type: none"> <li>vented to vapor recovery or equivalent control devices that have 95% control efficiency within one year of the second release event of greater than 10 lbs VOC.</li> <li>equipped with at least two or three redundant preventive measures to minimize episodic releases, and</li> <li>equipped with tell-tale indicators.</li> </ul> <p>North Central Texas – Final 2007 SIP, Oil &amp; Gas Production, Natural Gas Processing, Measure #144. Propose to revise leak definitions and requirements for shorter repair periods based on recently revised San Joaquin Valley Rule 4409, amended July 2004.</p> | Meets RACT        |

**TABLE D-7 (continued)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                                                       | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>EVALUATION</b> |
|-----------------|-------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1174            | VOC         | Control of Volatile Organic Compound Emissions from the Ignition of Barbecue Charcoal (Amended 10/5/90) | VOC emissions less than 0.02 lb VOC per start.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Meets RACT        |
| 1175            | VOC         | Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products (Amended 11/5/10)       | VOC limit for expandable polystyrene molding operations is less than 2.4 lbs/100 lbs of raw material processed                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Meets RACT        |
| 1176            | VOC         | Sumps and Wastewater Separators (Amended 9/13/96)                                                       | <ul style="list-style-type: none"> <li>• Wastewater: 500 ppmv</li> <li>• Sumps and wastewater separators must have floating cover with seals; or fixed cover vented to control</li> <li>• Sewer lines: totally enclosed</li> <li>• Process drains: with SCAQMD approved water seals</li> <li>• Junction boxes: totally enclosed</li> <li>• Control device: <math>\geq 95\%</math> efficiency or <math>\leq 500</math> ppmv leak above background</li> <li>• Monthly to annually inspection</li> </ul> | <p>Bay Area Rule 8-8 (Amended 9/15/04) in general is similar to South Coast Rule 1176, with the following exceptions:</p> <ul style="list-style-type: none"> <li>• Floating covers must have double seals; and</li> <li>• Semi-annual inspection is allowed.</li> </ul> <p>In their 2007 AQMP, San Joaquin Valley proposes to further study the following areas:</p> <ul style="list-style-type: none"> <li>• Require crude oil production sumps to have fixed roof and vented to control with 99% control efficiency;</li> <li>• Require wastewater separators to have fixed roof and vented to control with 95% control efficiency, and</li> <li>• Require floating roofs to be equipped with double seals</li> </ul> | Meets RACT        |

**TABLE D-7 (concluded)**  
**Evaluation of SCAQMD VOC Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                                               | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                               | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b>                                                                                                                                                                                                                | <b>EVALUATION</b> |
|-----------------|-------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1177            | VOC         | Liquefied Petroleum Gas Transfer and Dispensing (Adopted 6/1/12)                                | The rule specifies tightened connectors (valves and seals) for vapor and liquid transfer from storage tanks to cargo tanks to minimize leakage.                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                            | Meets RACT        |
| 1178            | VOC         | Further Reductions of VOC Emissions From Storage Tanks at Petroleum Facilities (Amended 4/7/06) | Applicable to high emitting facility that has 20 tpy VOC emissions or more and tanks >19,815 gals with liquids having TVP > 0.1 psia. Rule 1178 requires doming for high emitting external floating roof tanks, better seals and better control for all tanks. (Note that Rule 463 is applicable for tanks >19,815 gals at all facilities and have requirements for fixed roof tanks and floating roof tanks.) | In the 2007 AQMP, San Joaquin proposes to revise Rule 4623 to lower tank capacity applicability, lower TVP threshold, and revisit exemptions to broaden source applicability.<br><br>Midwest RPO control measure proposes to expand source applicability of LADCO state rules to include 10,000 gal tanks. | Meets RACT        |
| 1179            | VOC         | Publicly Owned Treatment Works Operations (Amended 3/6/92)                                      | Include recordkeeping requirements.                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                            | Meets RACT        |
| 1183            | VOC         | Outer Continental Shelf (OCS) Air Regulations (Adopted 3/12/93)                                 | Adopt by reference Code of Federal, Part 55, Title 40.                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                            | Meets RACT        |
| 1189            | VOC         | Emissions From Hydrogen Plant Process Vents (Adopted 1/21/00)                                   | For existing plants, 2.5 lbs VOC per million cubic feet of hydrogen produced. For new plants, 0.5 lbs VOC per million cubic feet of hydrogen produced.                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                            | Meets RACT        |

**TABLE D-8**  
**Evaluation of SCAQMD Ammonia (NH<sub>3</sub>) Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b> | <b>RULE TITLE</b>                                                                             | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b> | <b>EVALUATION</b>                                                                                                                                                                 |
|-----------------|-------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 223             | NH3         | Emissions Reduction Permits From Large Confined Animal Facilities (Adopted 6/2/06)            | <p>Sets permit requirement for new and modified LCAF facilities.</p> <p>Specifics mitigation options by animal and facility type for:</p> <ul style="list-style-type: none"> <li>• Feed and silage handling,</li> <li>• Milk parlor operations,</li> <li>• Corrals and free stall barn operations,</li> <li>• Handling of manure and solids,</li> <li>• Handling of manure in liquid form</li> <li>• Land application of liquid or solid manure</li> </ul> | SJVAPCD Rule 4570 sets comparable permit requirements and mitigation measures.              | Rule 223 meets RACT through its implementation of technically feasible mitigation measures. The focus of the SJVAPCD rule is not applicable in the Basin for dry feed operations. |
| 1105.1          | NH3         | Reduction of PM10 and Ammonia Emissions From Fluid Catalytic Cracking Units (Adopted 11/7/03) | 0.005 grain/dscf PM10 and 10 ppmv NH3 slip                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                             | RACT Equivalent                                                                                                                                                                   |
| 1127            | NH3         | Emission Reductions from Livestock Waste (Adopted 8/6/04)                                     | Set protocol for dairy farm manure removal and processing and sets alternate planning requirements for manure composting                                                                                                                                                                                                                                                                                                                                   | SJVAPCD Rule 4565 and 4566 sets comparable permit requirements and mitigation measures.     | RACT Equivalent                                                                                                                                                                   |

**TABLE D-8** (continued)  
**Evaluation of SCAQMD Ammonia (NH<sub>3</sub>) Rules and Regulations**

| RULE NO. | TYPE | RULE TITLE                                                          | CURRENT RULE REQUIREMENTS                                                                                                                                                                                                                                                  | OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | EVALUATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1133.2   | NH3  | Emission Reductions from Co-Composting Operations (Adopted 1/10/03) | 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. | <p>RACT Equivalent</p> <p><u>SCAQMD Rule 1133.2 is more stringent than San Joaquin's Rule 4565 for larger co-composting facilities and less stringent for smaller co-composting facilities. While SCAQMD Rule 1133.2 requires either 70 or 80% overall emission reductions from all parts of composting process, San Joaquin's Rule 4565 requires add-on controls to apply only to the active composting phase. Rule 1133.2 also has more stringent requirements for in-vessel composting.</u></p> |

**TABLE D-8** (concluded)  
**Evaluation of SCAQMD Ammonia (NH<sub>3</sub>) Rules and Regulations**

| <b>RULE NO.</b> | <b>TYPE</b>     | <b>RULE TITLE</b>                                                             | <b>CURRENT RULE REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>OTHER DISTRICTS' 2000-2014 RULES, CONTROL MEASURES, U.S. EPA CTGS, AND OTHER STUDIES</b> | <b>EVALUATION</b> |
|-----------------|-----------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------|
| 1133.3          | NH <sub>3</sub> | Emission Reductions from Greenwaste Composting Operations<br>(Adopted 7/8/11) | <p>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.</p> <p>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<sub>3</sub> emissions.</p> |                                                                                             | RACT Equivalent   |

## ATTACHMENT E

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**DEMONSTRATION OF COMPLIANCE WITH  
CLEAN AIR ACT, SUBPART 4, SECTION 189(E)  
AND OTHER PRECURSOR REQUIREMENTS**

## **BACKGROUND**

PM2.5 has four major precursors, other than direct PM2.5 emissions, that may contribute to the development of the ambient PM2.5: ammonia, NO<sub>x</sub>, SO<sub>x</sub>, and VOC. The 2012 AQMP modeling analysis resulted in a set of ratios that reflect the relative amounts of ambient PM2.5 improvements expected from reductions of PM2.5 precursors emissions. For instance, Table 5-2 in Chapter 5 of the 2012 AQMP demonstrates that one ton of VOC emission reductions is only 30 percent as effective as one ton of NO<sub>x</sub> for lowering 24-hour PM2.5 concentrations. VOC reductions are only four percent and two percent as effective as SO<sub>x</sub> and direct PM2.5 reductions, respectively, on a per ton basis. Thus, VOC controls have a much less significant impact on ambient 24-hour PM2.5 levels relative to other PM2.5 precursors.

## **EMISSIONS CONTRIBUTION**

While similar relative contributions to PM2.5 have not been developed for ammonia, the mass contributions of ammonium sulfate and ammonium nitrate are accounted for in the SO<sub>x</sub> and NO<sub>x</sub> contributions. This essentially assumes that PM2.5 formation in the basin is not ammonia limited with sufficient ammonia in the atmosphere to combine with available nitrates and sulfates. Under these conditions, ammonia controls are much less effective at reducing ambient PM2.5 levels than other precursors.

While the 2012 AQMP ammonia emissions inventory was close to 100 ton per day (TPD), the inventory was highly variable in terms of source contributions and spatial distribution throughout the Basin. As presented in Table E-1, major sources accounted for 1.7 TPD or less than 2 percent of the Basin inventory. Furthermore, only four major source emitters were noted in the inventory with the single highest major source accounting for less than 0.50 TPD direct emissions. All four major sources are located in the western Basin.

**TABLE E-1**  
**VOC and Ammonia Emissions Contributions**

| <b>POLLUTANT</b> | <b>ALL SOURCES</b><br><i>(Tons Per Day)</i> | <b>MAJOR SOURCES</b><br><i>(Tons Per Day)</i> | <b>RELATIVE CONTRIBUTION</b> |
|------------------|---------------------------------------------|-----------------------------------------------|------------------------------|
| VOC              | 451 <sup>1</sup>                            | 8.0 <sup>2</sup>                              | 1.8%                         |
| Ammonia          | 99 <sup>3</sup>                             | 1.7 <sup>2</sup>                              | 1.7%                         |

<sup>1</sup> 2012 AQMP - Appendix III: Base and Future Year Emission Inventory; 2014 Annual Average Emissions by Source Category in South Coast Air Basin

<sup>2</sup> 2013 SCAQMD Annual Emission Reporting

<sup>3</sup> ARB Almanac 2013 – Appendix B: County Level Emissions and Air Quality by Air Basin; County Emission Trends

Prior to the 2003 AQMP, significant effort was undertaken to develop inter-pollutant trading ratios to meet NSR emissions reduction goals. The primary mechanism was to reduce SO<sub>x</sub> to offset PM emissions. Aerosol chemical mechanisms embedded in box and regional modeling platforms were used to estimate the formation rates of ammonium sulfate from local sulfur emissions to establish a SO<sub>x</sub> emissions to PM formation ratio. The analyses determined that the influence of ammonia emissions was spatially varying where coastal-metro zone (west Basin) trading ratios of SO<sub>x</sub> to PM valued more than 5:1 per unit SO<sub>x</sub> emissions to PM. Conversely, eastern Basin ratios valued 1:1 since ammonia emissions were abundant and all SO<sub>x</sub> emissions were likely to rapidly transform to particulate ammonium sulfate. The inter-pollutant trades made during this time were reviewed by U.S. EPA and were included by reference to the EPA sponsored Inter-Pollutant Trading Working Group<sup>4</sup>.

As part of the controls strategy evaluation for future PM<sub>2.5</sub> attainment, additional set of analyses were conducted to test the potential impact of the use of SCR as a NO<sub>x</sub> control mechanism for mobile sources in the Basin. The analyses assumed that light as well as heavy duty diesels would use the control equipment potentially resulting in a 78-85 percent increase in ammonia from those source categories. The results of the analysis, presented at the September 24, 2010 SCAQMD Mobile Source Committee Meeting<sup>5</sup>, indicated that a 10 TPD increase in ammonia would result in a net 0.22 µg/m<sup>3</sup> increase in regional PM<sub>2.5</sub> concentrations. The emissions mostly followed heavy traffic corridors including freeways and major arterials. Regardless, the minimal PM<sub>2.5</sub> simulated increase from a 10 percent increase in the Basin inventory reflected the degree of saturation of ammonia in the Basin and minimal sensitivity of changes in ammonia emissions to PM<sub>2.5</sub> production.

During the development of the 2012 AQMP, a sensitivity analysis was conducted to test the potential impact of using a feed supplement applied to dairy cows on a forecasted basis that would reduce bovine ammonia emissions by 50 percent. The analysis focused on the Mira Loma area where more than 70 percent of the Basin's dairy emissions originate. In the sensitivity analysis a total of 2.9 TPD emissions were reduced from 103 dairy sources, or an average of 0.028 TPD per source (roughly one tenth of major source threshold)<sup>6</sup>. Since the Mira Loma monitoring station was embedded among the dairy sources, the reduction of the ground level emissions resulted in an approximate 0.16 µg/m<sup>3</sup> reduction in PM<sub>2.5</sub>. As in the aforementioned analyses, the reduction in regional ammonia emissions resulted in a minimal PM<sub>2.5</sub> impact per ton emissions reduced.

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and Forecasts 2012 Emissions. NOTE: 2012 AQMP – Appendix III provides 2014 Annual Average of 102 tpd of NH<sub>3</sub>; the relative contribution would not change ( $1.7/102 = 1.7\%$ )

<sup>4</sup> "Preliminary Assessment of Methods for Determining Interpollutant Offsets", Correspondence with Scott Bohning U.S. EPA Region IX, May 6, 2002.

<sup>5</sup> "Impact of Higher On- and Off-road Ammonia Emissions on Regional PM<sub>2.5</sub>," Item 3, SCAQMD, Mobile Source Committee, September 24, 2010.

<sup>6</sup> "2008 24-hour PM<sub>2.5</sub> Model Performance/Preliminary Attainment Demonstration," Item #2, Scientific Technical Modeling Peer Group Advisory Committee, June 14, 2012.

Thus, ammonia controls also have a much less significant impact on 24-hour PM<sub>2.5</sub> exceedances than other precursors. Note however, that the effect on annual PM<sub>2.5</sub> levels will be further evaluated in the 2016 AQMP.

## **SECTION 189(E)**

Clean Air Act (CAA), Title I, Part D, Subpart 4, Section 189(e) states that control requirements applicable to plans in effect for major stationary PM sources shall also apply to major stationary sources of PM precursors, except where such sources does not contribute significantly to PM levels which exceed the standard in the area. According to the U.S. EPA, a major source in a nonattainment area is a source with emission of any one air pollutant greater than or equal to the major source thresholds in a nonattainment area. This threshold is generally 100 tons per year (tpy) or lower depending on the nonattainment severity for all sources. Emissions are based on “potential to emit” and include the effect of add-on emission control technology, if enforceable (*must be able to show continual compliance with the limitation or requirement*).

Major stationary sources of NO<sub>x</sub> and SO<sub>x</sub> are already subject to emission offsets (e.g., Regulation XX (RECLAIM) and Regulation XII (New Source Review)). Thus, to demonstrate compliance with CAA Subpart 4, Section 189(e), an analysis was conducted of the emissions of VOC and ammonia from major stationary sources during rule development of amended Rule 1325 (*Federal PM<sub>2.5</sub> New Source Review Program*) approved by the SCAQMD Governing Board on December 5, 2014 (<http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2014/2014-dec5-038.pdf?sfvrsn=2>). That analysis concluded that VOC and ammonia from major sources (emitting 100 tpy or greater) contribute less than 2% of the overall Basin-wide VOC and ammonia emissions (Table E-1), and by extension, do not contribute significantly to PM levels. Furthermore, both VOC and ammonia are subject to requirements for Best Available Control Technology (BACT) under existing New Source Review (NSR) at a zero threshold, so those emission will still be minimized. This analysis was also included in the final approved staff report for PAR 1325.

~~Thus, the SCAQMD believes the requirements of CAA Subpart 4, Section 189(e) are satisfied and thus request that the Administrator of U.S. EPA makes this determination pursuant to this Section.~~

## **NEW SOURCE REVIEW**

Because ammonia from major stationary sources does not significantly contribute to PM levels (see Table E-1), ammonia emission sources have not historically been subject to NSR offset requirements. However, for permitted ammonia sources, SCAQMD Rule 1303 (*NSR Requirements*) requires denial of “the Permit to Construct for any relocation, or for any new or

modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, unless BACT is employed for the new or relocated source or for the actual modification to an existing source.” No new major stationary source of ammonia is expected to be introduced to the region given that these new sources would be subject to BACT requirements (under SCAQMD Rule 1303 (*NSR Requirements*), BACT shall be at least as stringent as Lowest Achievable Emissions Rate (LAER) as defined in the federal Clean Air Act Section 171(3) [42 U.S.C. Section 7501(3)]). As mentioned above, there are currently only four major sources of ammonia (emitting more than 100 tons per year) in the South Coast Air Basin. If these sources were new to the region, they would be subject to BACT as stringent as LAER and not expected to reach 100 tons per year so as to be classified as a major source, thus not subject to NSR offset requirements.

However unlikely, even if new or modified major sources of ammonia increase ammonia emissions in the Basin, the ammonia contribution from major sources in the South Coast Air Basin will still not be a significant contributor to PM2.5 levels given that all current major sources of ammonia account for less than two percent of the overall ammonia emissions inventory. For instance, in the extremely unlikely event that ammonia emissions from major sources double, they would still contribute less than five percent of the overall ammonia inventory.

**ATTACHMENT F**

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**UPDATED LIST OF CONTROL STRATEGY  
COMMITMENTS**

## UPDATE OF COMMITMENTS

The short-term PM<sub>2.5</sub> control measures in the 2012 AQMP included stationary source control measures, technology assessments, an indirect source measure and one education and outreach measure. The development of the control measures considered the emissions reductions and the adoption and implementation dates that would result in attainment of the 2006 24-hour PM<sub>2.5</sub> standard of 35 µg/m<sup>3</sup>. In some cases, only a range of possible emissions reductions could be determined, and for some others, the magnitude of potential reductions could not be determined at that time. The short-term PM<sub>2.5</sub> control measures were presented in Table 4-2 (Chapter 4) of the 2012 AQMP, and the following table, Table F-1 updates that information, thus replacing Table 4-2 in the 2012 AQMP for inclusion in the 24-hour PM<sub>2.5</sub> SIP. Note that these changes do not affect the magnitude or timing of emission reductions commitments supporting the attainment demonstration in the 2012 AQMP and this Supplement. The emission reduction commitment for CMB-01 (Further NO<sub>x</sub> Reductions from RECLAIM) was as a contingency measure only for PM<sub>2.5</sub>, and thus does not affect the attainment demonstrations.

The measures target a variety of source categories: Combustion Sources (CMB), PM Sources (BCM), Indirect Sources (IND), Educational Programs (EDU) and Multiple Component Sources (MCS).

Two PM<sub>2.5</sub> control measures, BCM-01 (Further Reductions from Residential Wood Burning Devices) and BCM-02 (Further Reductions from Open Burning), were adopted in 2013 in the form of amendments to Rules 445 (Wood Burning Devices) and 444 (Open Burning), respectively. Together, these amendments generated a total of 11.7 tons of PM<sub>2.5</sub> per day reductions on an episodic basis. Control measure CMB-01 (Further NO<sub>x</sub> Reductions from RECLAIM), which was submitted as a contingency measure, is anticipated to be considered by the SCAQMD Governing Board in the first half of 2015. The rulemaking process for control measure IND-01 (Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities) is underway, with anticipated SCAQMD Governing Board consideration in 2015 and the technology assessment for control measure BCM-04 (Further Ammonia Reductions from Livestock Waste) will now be adopted in the 2015 to 2016 timeframe with rulemaking to follow, if technically feasible and cost-effective. The BCM-03 (Emission Reductions from Under-Fired Charbroilers) technology assessment is ongoing and is expected to be completed by 2015 with rule development to follow by 2017.

Pursuant to CAA Section 172(c)(9), SIPs are required to include contingency measures to be undertaken if the area fails to make reasonable further progress or attain the NAAQS by the attainment date. The contingency measures “should provide for emission reductions equivalent to about one year of reductions needed for reasonable further progress (RFP)” (79 FR 20642-20645) The 2012 AQMP relied on excess air quality improvement from the control strategy as well as potential NO<sub>x</sub> reductions from control measure CMB-01 (Further NO<sub>x</sub> Reductions from

| RECLAIM) to demonstrate compliance with the federal requirement. No additional contingency measure commitment is being proposed in this Supplement.

**TABLE F-1**  
**Updated 2012 SIP Emission Reduction Commitments to Attain 24-hour PM<sub>2.5</sub> NAAQS (35 µg/m<sup>3</sup>)**

|                                       |                                                                                                    | 2012 AQMP     |                  |                  | PROPOSED in SUPPLEMENT |                  |                  |
|---------------------------------------|----------------------------------------------------------------------------------------------------|---------------|------------------|------------------|------------------------|------------------|------------------|
| Control Measure #                     | CONTROL MEASURE TITLE                                                                              | Adoption Date | COMMITMENT       | ACHIEVED         | Adoption Date          | COMMITMENT       | ACHIEVED         |
|                                       |                                                                                                    |               | 2014             | 2014             |                        | 2015             | 2015             |
| PM2.5 EMISSIONS                       |                                                                                                    |               |                  |                  |                        |                  |                  |
| IND-01                                | Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Facilities [R4001] | 2013          | N/A <sup>1</sup> | N/A <sup>1</sup> | 2015                   | N/A <sup>1</sup> | N/A <sup>1</sup> |
| BCM-01                                | Further Reductions from Residential Wood Burning Devices [R445]                                    | 2013          | 7.1              | 7.1              | 2013                   | 7.1              | 7.1              |
| BCM-02                                | Further Reductions from Open Burning [R444]                                                        | 2013          | 4.6              | 4.6              | 2013                   | 4.6              | 4.6              |
| MCS-01                                | Application of All Feasible Measures Assessment                                                    | Ongoing       | TBD <sup>2</sup> | TBD              | Ongoing                | TBD <sup>2</sup> | TBD              |
| BCM-03                                | Emission Reductions from Under-Fired Charbroilers [R1138]                                          | 2015          | TBD <sup>3</sup> | TBD              | 2017                   | TBD <sup>3</sup> | TBD              |
| EDU-01                                | Further Criteria Pollutant Reductions from Education, Outreach and Incentives                      | Ongoing       | N/A <sup>4</sup> | N/A              | Ongoing                | N/A <sup>4</sup> | N/A              |
| TOTAL PM2.5 EMISSION REDUCTIONS (TPD) |                                                                                                    |               | 11.7             | 11.7             | --                     | 11.7             | 11.7             |
| NOx EMISSIONS                         |                                                                                                    |               |                  |                  |                        |                  |                  |
| CMB-01                                | Further NOx Reductions from RECLAIM [Reg XX]                                                       | 2013          | 2.0 <sup>5</sup> | --               | 2015                   | 2.0 <sup>5</sup> | --               |
| IND-01                                | Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Facilities [R4001] | 2013          | N/A <sup>1</sup> | N/A <sup>1</sup> | 2015                   | N/A <sup>1</sup> | N/A <sup>1</sup> |
| TOTAL NOx EMISSION REDUCTIONS (TPD)   |                                                                                                    |               | 2.0              | --               | --                     | 2.0              | --               |
| SOx EMISSIONS                         |                                                                                                    |               |                  |                  |                        |                  |                  |
| IND-01                                | Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Facilities [R4001] | 2013          | N/A <sup>1</sup> | N/A <sup>1</sup> | 2015                   | N/A <sup>1</sup> | N/A <sup>1</sup> |
| TOTAL SOx EMISSION REDUCTIONS (TPD)   |                                                                                                    |               | --               | N/A <sup>1</sup> | --                     | --               | N/A <sup>1</sup> |
| NH3 EMISSIONS                         |                                                                                                    |               |                  |                  |                        |                  |                  |
| BCM-04                                | Further Ammonia Reductions from Livestock Waste [R1127] - Phase I (Tech Assessment)                | 2013-2014     | TBD <sup>2</sup> | TBD              | 2015 - 2016            | TBD <sup>2</sup> | TBD              |
|                                       | -Phase II (Rule Amendment)                                                                         | TBD           | TBD <sup>2</sup> | TBD              | TBD                    | TBD <sup>2</sup> | TBD              |
| TOTAL NH3 EMISSION REDUCTIONS (TPD)   |                                                                                                    |               | TBD              | TBD              | --                     | --               | --               |

<sup>1</sup> Measure is designed to ensure reductions assumed to occur will in fact occur

<sup>2</sup> Reductions to be determined once the technical assessment is complete, and inventory and control approach are identified

<sup>3</sup> Will submit into SIP once technically feasible and cost effective options are identified

<sup>4</sup> Reductions cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs)

<sup>5</sup> Emission reductions are included in the SIP as a contingency measure, if triggered

## ATTACHMENT C



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4182  
(909) 396-2000 • <http://www.aqmd.gov>

**SUBJECT:** NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

**PROJECT TITLE:** SUPPLEMENT TO 24-HOUR PM<sub>2.5</sub> STATE IMPLEMENTATION PLAN (SIP) FOR SOUTH COAST AIR BASIN

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (SCAQMD) is the Lead Agency and has prepared a Notice of Exemption for the project identified above.

The SCAQMD has reviewed the proposed project pursuant to CEQA Guidelines §15002 (k)(1) - General Concepts, the first step of a three-step process for deciding which document to prepare for a project subject to CEQA. The proposed amendments do not require any major modifications or changes to existing operations. The SCAQMD has determined that that it can be seen with certainty that there is no possibility that the proposed project may have any significant effects on the environment, and is therefore, exempt pursuant to CEQA Guidelines §15061 - Review for Exemption, paragraph (b)(3) – “general rule” exemption.

A Notice of Exemption has been prepared pursuant to CEQA Guidelines §15062 - Notice of Exemption. If the project is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange, Riverside and San Bernardino counties.

Any questions regarding this Notice of Exemption should be sent to Michael Krause (c/o Planning, Rule Development and Area Sources) at the above address. Mr. Krause can also be reached at (909) 396-2706 or [mkrause@aqmd.gov](mailto:mkrause@aqmd.gov).

**Date:** February 6, 2015

**Signature:** \_\_\_\_\_

A handwritten signature in blue ink, reading 'Michael Krause', written over a horizontal line.

Michael Krause  
Program Supervisor, CEQA Section  
Planning, Rules, and Area Sources

## NOTICE OF EXEMPTION

**To:** County Clerks  
Counties of Los Angeles, Orange,  
Riverside and San Bernardino

**From:** South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

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**Project Title:**

Supplement to 24-hour PM2.5 State Implementation Plan (SIP) for South Coast Air Basin

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**Project Location:**

South Coast Air Quality Management District: the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties) and the Riverside County portion of the Mojave Desert Air Basin.

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**Description of Nature, Purpose, and Beneficiaries of Project:**

The purpose of this Supplement to the 24-hour PM2.5 SIP for the South Coast Air Basin is to demonstrate attainment of the 2006 24-hour PM2.5 National Ambient Air Quality Standard (NAAQS) by 2015 under Clean Air Act (CAA) Subpart 4, along with a new transportation conformity budget for 2015, analysis of Reasonably Available Control Measures (RACM)/Reasonably Available Control Technology (RACT), emission reduction commitments submitted in the 2012 AQMP, and other Subpart 4 requirements. In addition, the Supplement includes a discussion of the effects of the drought on a 2014 attainment date.

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**Public Agency Approving Project:**

South Coast Air Quality Management District

**Agency Carrying Out Project:**

South Coast Air Quality Management District

---

**Exempt Status:**

CEQA Guidelines §15002 (k)(1) – General Concepts; and  
CEQA Guidelines §15061 (b)(3) – Review for Exemption

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**Reasons why project is exempt:**

The SCAQMD has reviewed the Supplement to 24-hour PM2.5 State Implementation Plan (SIP) for South Coast Air Basin pursuant to CEQA Guidelines §15002 (k)(1) - General Concepts, the first step of a three-step process for deciding which document to prepare for a project subject to CEQA. The SCAQMD has determined that the Supplement is not proposing to add new or delete any control measures from the current 24-hour PM2.5 SIP for South Coast Air Basin that have the potential to have a direct or indirect adverse impact on the environment but merely presents updated analyses and other changes that do not have the potential to cause a direct or indirect adverse impact on the environment, thus it can be seen with certainty that there is no possibility that the proposed project may have any significant effects on the environment, and is therefore, exempt pursuant to CEQA Guidelines §15061 - Review for Exemption, paragraph (b)(3) – “general rule” exemption.

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**Project Approval Date:**

SCAQMD Governing Board Hearing: February 6, 2015, 9:00 a.m.; SCAQMD Headquarters

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**CEQA Contact Person:**

Mr. Michael Krause

**Phone Number:**

(909) 396-2706

**Fax Number:**

(909) 396-3324

**Email:**

[mkrause@aqmd.gov](mailto:mkrause@aqmd.gov)

---

**Date Received for Filing:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

*(To be signed upon project approval)*

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Michael Krause, Program Supervisor  
Planning, Rule Development & Area  
Sources