



# **2020 Reasonably Available Control Technology (RACT)**

## **Demonstration for the 2015 8-Hour Ozone Standard**



## **ACKNOWLEDGMENTS**

The District wishes to acknowledge the leadership and effort of those who contributed to the *2020 RACT Demonstration for the 2015 8-Hour Ozone Standard*

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## Table of Contents

### Table of Contents

#### Chapter 1: Overview

1.1 Introduction to the 2020 RACT Demonstration .....	1-1
1.2 2015 8-Hour Ozone RACT Demonstration Elements .....	1-2
1.3 Process for Developing this RACT Demonstration SIP .....	1-4
1.3.1 Review of Federal RACT Requirements.....	1-4
1.3.2 RACT Demonstration Process .....	1-6
1.3.3 Public Process.....	1-8

#### Chapter 2: CTG Source Categories and Applicable District Rules

2.1 District Implementation of EPA Control Techniques Guidelines .....	2-1
2.2 CTG Sources .....	2-1
2.3 CTGs without Subject Facilities in the Valley.....	2-5

#### Chapter 3: Major Sources and Applicable RACT Rules

3.1 Major Source Listing .....	3-1
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#### Chapter 4: Rule Analysis

4.1 District Rules Analyzed for RACT .....	4-1
Rule Evaluations.....	4-6

## List of Tables

Table 2-1 EPA Control Techniques Guidelines and District Rules .....	2-2
Table 2-2 Negative Declarations.....	2-5
Table 3-1 Major Sources and Applicable RACT Rules .....	3-2
Table 4-1 District Rules Found to Meet RACT and Rule History .....	4-2
Table 4-2 District Rules With Additional Evaluations Included.....	4-4
Table 4-3 District NOx and VOC Rules Not Subject to RACT Analysis .....	4-4

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# CH 1 Overview



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## **Chapter 1: Overview**

### **1.1 INTRODUCTION TO THE 2020 RACT DEMONSTRATION**

The San Joaquin Valley (Valley) is an intermountain basin comprised of nearly 25,000 square miles. The Valley's geography and meteorology exacerbate the formation and retention of high levels of air pollution. Surrounding mountains and consistently stagnant weather patterns prevent the dispersal of pollutants that accumulate within the Valley. The region is also home to the state's major arteries for goods and people movement, thereby attracting a large volume of vehicular traffic. Additionally, the Valley's large biogenic emissions, wildfires, and pollution transported from outside the boundaries of the San Joaquin Valley Air Pollution Control District (District) contribute significantly towards the Valley's current air quality challenges.

To achieve the District's mission of improving air quality and public health for all Valley residents, the District has developed and implemented numerous air quality plans to reduce emissions from stationary sources through the adoption of nearly 650 of the most stringent rules in the nation. In addition to regulatory efforts, the District has strong voluntary incentive programs that have invested more than \$2.8 billion of combined funds in clean-air projects. Similarly, the California Air Resources Board (CARB) has adopted regulations and incentive measures for mobile sources. Together, these efforts represent the nation's toughest air pollution emissions controls and have greatly contributed to reduced ozone concentrations in the Valley. Over the past several decades, these air quality improvement efforts have reduced oxides of nitrogen (NO<sub>x</sub>) emissions (primary precursor for both ozone and PM<sub>2.5</sub>) from mobile and stationary sources by over 75%, including a greater than 90% reduction from stationary sources under the District's jurisdiction, resulting in significant air quality progress towards meeting the health-based federal ozone and PM<sub>2.5</sub> standards. These efforts resulted in the Valley being the first and only region in the nation with an "extreme" nonattainment classification to subsequently attain the federal 1-hour ozone standard.

Despite substantial progress made to improve air quality in the Valley through the implementation of existing plans and clean air investments by Valley businesses and residents, the Valley continues to experience unique and significant air quality challenges in attaining the increasingly stringent federal air quality standards. On October 1, 2015, the U.S Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS, or standards) for ground-level ozone, lowering the primary and secondary ozone standard levels to 70 parts per billion (ppb). The Valley is classified as an "extreme" nonattainment area for the 2015 ozone standard. This nonattainment classification sets forth a requirement to adopt a Reasonably Available Control Technology (RACT) demonstration as a revision to the State Implementation Plan (SIP) no later than August 3, 2020.

Pursuant to Sections 182(b)(2) and (f) of the federal Clean Air Act (CAA, or "the Act"), areas classified as moderate or above for ozone nonattainment are required to implement RACT requirements for sources that are subject to EPA Control Techniques

Guidelines (CTGs) and for “major sources” of volatile organic compounds (VOCs) and NO<sub>x</sub>, which are ozone precursors. These RACT requirements ensure that significant sources of emissions in nonattainment areas are controlled to a “reasonable” extent, but not necessarily to the more stringent control levels expected of new or modified major stationary sources.

District staff have previously prepared comprehensive RACT demonstrations, through which EPA has approved current District rules as meeting RACT. Most recently, in 2018, EPA fully approved the *2014 Reasonably Available Control Technology (RACT) Demonstration for the 2008 8-Hour Ozone State Implementation Plan (SIP)* (2014 RACT SIP), which demonstrated that the District’s current rules implemented RACT for all CTG categories and all major, non-CTG sources.<sup>1</sup> This *2020 Reasonably Available Control Technology Demonstration for the 2015 8-Hour Ozone Standard* (2020 RACT Demonstration) will build upon the analyses conducted for previous RACT demonstrations, as well as control measure analyses conducted for the recent *2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards* (2018 PM<sub>2.5</sub> Plan). The 2018 PM<sub>2.5</sub> Plan demonstrated that District rules for both NO<sub>x</sub> and PM<sub>2.5</sub> implemented the Most Stringent Measures feasible for implementation in the region. It is important to note that, due to the nonattainment classification of the Valley, and due to the comprehensive rule evaluations regularly conducted as a part of planning for attainment of both PM<sub>2.5</sub> and ozone health-based air quality standards, District rules exceed RACT.

The preparation of the 2020 RACT Demonstration included a comprehensive evaluation of all NO<sub>x</sub> and VOC District rules to ensure that each rule meets or exceeds RACT. District staff carefully reviewed and compared each rule to federal, state, and local regulations, and reviewed resources such as state suggested control measures and technology clearinghouses, to determine that existing major sources and CTG sources in the Valley are subject to RACT. This 2020 RACT Demonstration fulfills CAA requirements and demonstrates that all federal RACT requirements continue to be satisfied in the Valley. The below sections of Chapter 1 outline the requirements for a RACT demonstration, review available EPA guidance, and further discuss the District’s process for preparing this SIP revision.

## **1.2 2015 8-HOUR OZONE RACT DEMONSTRATION ELEMENTS**

EPA’s Final Rule for Implementation of the 2015 8-Hour Ozone NAAQS establishes guidance for air districts to demonstrate that RACT levels of emission controls are being

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<sup>1</sup> 83 FR 22908- EPA Rulemaking for the California State Implementation Plan: San Joaquin Valley Unified Air Pollution Control District 2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP), available at: <https://www.federalregister.gov/documents/2018/05/17/2018-10571/air-plan-approval-california-san-joaquin-valley-unified-air-pollution-control-district-reasonably>



implemented.<sup>2</sup> Much of the approach from the SIP demonstration elements under the 2008 Ozone SIP Requirements Rule (80 FR 12265, March 6, 2015) are retained for the 2015 Ozone NAAQS.

Additionally, a letter from EPA Region IX in 2006, provides further clarification by discussing EPA Region IX's understanding of what might constitute an acceptable RACT SIP submittal.<sup>3</sup> The strategy outlined in the letter includes the following main points:

- A description of efforts to identify all source categories within the District requiring RACT, including CTG sources (i.e., covered by an EPA Control Technique Guideline document) and major non-CTG sources.
- A submission of negative declarations where there are no facilities (major or minor) within the District subject to a CTG.
- A list of the state/local regulation that implements RACT for all categories needing RACT, including the date EPA approved these regulations as fulfilling RACT.
- A description of the basis for concluding that the regulations fulfill RACT. Documents useful in establishing RACT include CTGs, Alternative Control Technique guidelines (ACT), Maximum Achievable Control Technology (MACT) standards, New Source Performance Standards (NSPS), California Suggested Control Measures (SCM) and RACT/Best Available Retrofit Control Technology (BARCT) determinations, regulations adopted in other Districts, and guidance and rules developed by other state and local agencies.

Pursuant to EPA's guidance, this RACT Demonstration is composed of several main elements:

- A demonstration that EPA CTGs are being implemented in the Valley, and a discussion and recertification of the negative declarations for categories that do not exist in the Valley. (See Chapter 2)
- A demonstration that all major NO<sub>x</sub> and VOC sources in the Valley are covered by RACT rules. (See Chapter 3)
- A demonstration that the District's rules for ozone precursors (NO<sub>x</sub> and VOC) satisfy RACT levels of stringency, applicability, and enforceability. (See Chapter 4)

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<sup>2</sup> Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements, 80 Fed.Reg.234, pp. 62998-63036. (2018, December 6). To be codified 40 CFR Part 51. <https://www.govinfo.gov/content/pkg/FR-2018-12-06/pdf/2018-25424.pdf>

<sup>3</sup> EPA (March 9, 2006). Letter from Andrew Steckel, EPA Region IX Kurt Karaperos, CARB

## 1.3 PROCESS FOR DEVELOPING THIS RACT DEMONSTRATION

### 1.3.1 Review of Federal RACT Requirements

CAA Section 182(b)(2) states that ozone attainment plans shall assure that RACT for VOCs is applied at certain sources:

“The State shall submit a revision to the applicable implementation plan to include provisions to require the implementation of reasonably available control technology under section 172(c)(1) of this title with respect to each of the following:

(A) Each category of VOC sources in the area covered by a CTG document issued by the Administrator between November 15, 1990, and the date of attainment.

(B) All VOC sources in the area covered by any CTG issued before November 15, 1990.

(C) All other major stationary sources of VOCs that are located in the area.”

Section 182(f) extends federal RACT requirements to NO<sub>x</sub> rules and major NO<sub>x</sub> sources. Because the San Joaquin Valley Air Basin is classified as an “extreme” ozone nonattainment area, “major sources” are defined as sources that generate more than 10 tons per year of NO<sub>x</sub> or VOC.

#### **Definition of RACT**

Although the Clean Air Act itself does not define Reasonably Available Control Technology, 40 CFR 51.100(o) defines RACT as:

”devices, systems, process modifications, or other apparatus or techniques that are reasonably available, taking into account (1) the necessity of imposing such controls in order to attain and maintain a national ambient air quality standard; (2) the social, environmental, and economic impact of such controls; and (3) alternative means of providing for attainment and maintenance of such a standard.”

The foregoing definition applies to a specific federal provision regarding approval of extension requests for attainment plans for secondary air quality standards, but in the absence of a more definitive regulatory description, it is concise and useful. EPA also defined RACT in the Strelow memorandum<sup>4</sup> as:

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<sup>4</sup> The Strelow RACT Memorandum, published in BNA Environmental Reporter, December 9, 1976, pages 1210-1212

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

### **Purpose of Federal RACT**

The CAA requires RACT for certain sources in all nonattainment areas nationwide, regardless of the severity of the ozone problem.

“172(c) Nonattainment plan provisions

The plan provisions (including plan items) required to be submitted under this part shall comply with each of the following:

(1) In general

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

From this section, it is clear that RACT is intended as the minimum level of control that all ozone nonattainment areas must achieve for existing sources. It is also clear that RACT is not intended as the only level of control needed for all nonattainment areas to attain the ozone standard. Two key conclusions are drawn from the section above: first, states must adopt RACT for existing sources regardless if they are needed for attainment, and second, states may need additional measures beyond RACT to attain the standard. This second conclusion leads to the understanding that RACT is not intended to be the most stringent level of control in an area’s attainment strategy.

In the greater context of air pollution control levels, RACT is understood as the “floor-level” of air pollution controls, not the “ceiling-level.” Examples of more effective levels of emissions control include Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER). BACT and LAER are required for new sources, and for existing sources undergoing modification. Under state and federal air pollution programs, new facilities face more stringent pollution control requirements than existing facilities, with the understanding that better controls can be more easily implemented before a facility is built, than after it is built. New sources must generally implement BACT<sup>5</sup> and existing sources must implement a less stringent level of control such as

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<sup>5</sup> Federal regulations for permitting new facilities require Best Available Control Technology (BACT) for new sources in attainment areas, and Lowest Achievable Emission Rate (LAER) – a generally more stringent level –for new sources in nonattainment areas. LAER differs from BACT in that economic costs are **not** considered for candidate LAER controls that are considered “Achieved in Practice.” Under California state law, the District is required to apply

Reasonably Available Control Technology (RACT). Additionally, California law establishes an intermediate level of control that is the “best available” for “retrofit” to existing sources (entitled Best Available Retrofit Control Technology – BARCT<sup>6</sup>), recognizing that the state’s worst ozone problems demands more effective pollution control than what is usually considered “reasonably available.” It should also be noted that since District rules fulfill BARCT requirements for state purposes, and the control technology established by a BARCT rule is by definition the most effective retrofit control for the source category; it can be assumed to, at a minimum, satisfy RACT requirements, if not exceed RACT.

As discussed above, the purposes of BACT, RACT, and BARCT are different. BACT is designed to minimize the growth in future stationary source emissions with the installation of best available controls; RACT is designed to reduce current stationary source emissions from existing sources with the application of reasonably available controls; and BARCT is designed to reduce current stationary source emissions even further with the application of best available retrofit controls. BACT is identified and prescribed in the permitting process on a case-by-case administrative basis. RACT and BARCT are developed on an industry-wide basis in the rule development process, which concludes with regulatory action by the District Governing Board.

This understanding that RACT is intended to serve as the minimum level of control is further clarified with respect to the evaluation of cost-effectiveness (\$/ton of emissions reduced) for potential emission reduction options. EPA discusses a cost threshold for NO<sub>x</sub> in the Final Rule to implement the 8-hour Ozone National Ambient Air Quality Standard [70 FR 71611, pg. 71654]. A range of \$160–1,300 per ton of NO<sub>x</sub> removed was considered RACT in 1994. Adjusting for inflation, the RACT cost effectiveness threshold established by EPA is estimated to be \$2,300 per ton of NO<sub>x</sub> removed. Other estimates for the appropriate RACT cost-effectiveness level have ranged up to \$5,000 per ton of NO<sub>x</sub> or VOC removed. These RACT cost-effectiveness levels are significantly more cost-effective than BACM, BARCT, BACT, LAER, and other more stringent measures that are generally \$10,000 per ton of NO<sub>x</sub> or VOC emissions reduced, and sometimes up to hundreds of thousands of dollars per ton of NO<sub>x</sub> or VOC emissions reduced.

### **1.3.2 RACT Demonstration Process**

The preparation of this report involved careful and wide-ranging examination of individual rules against recent EPA RACT actions, federal regulations, state regulations, and technology guidelines, as well as evaluating District rules against comparable rules from California’s most technologically progressive air districts. The process began by

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“BACT” for new sources under essentially the same requirements as federal LAER. The District’s “BACT” determinations thus fulfill the federal LAER requirements.

<sup>6</sup> California Health and Safety Code (CH&SC) 40406: ... “best available retrofit control technology” means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.



comparing District rules to EPA's CTGs. There are a total of 43 EPA CTGs. Chapter 2 of this report links the EPA-promulgated CTGs with the District rules that cover the same source category.

The next part of the process was to identify the major sources of NO<sub>x</sub> and VOCs in the Valley. For this demonstration, District staff began with the federal CAA definition of major source. In the CAA, what constitutes a major source depends on the nonattainment classification of the area where the source is located. The District's classification as "extreme" for the 2015 8-hour ozone standard sets a major source threshold for NO<sub>x</sub> or VOC that has a potential to emit of at least 10 tons per year. The connection between the Valley's major sources and applicable District rules is outlined in Chapter 3 of this report. The District's database of current Permits-to-Operate was queried to find those sources that have the potential to emit at least 10 tons per year of either NO<sub>x</sub> or VOC. Chapter 3 contains a list of all of the facilities that have the potential to emit of at least 10 tons per year of either NO<sub>x</sub> or VOC, and the NO<sub>x</sub> and VOC rules to which the facility's equipment is subject.

Finally, Chapter 4 contains RACT evaluations of current District rules. All of the District's NO<sub>x</sub> and VOC prohibitory rules are addressed in this RACT demonstration. The rules were rigorously compared to federal and state regulations and state and federal guidance on emission controls. As previously agreed to by EPA staff, the rules were also compared to analogous regulations adopted by California's most technologically progressive air districts: South Coast Air Quality Management District, Bay Area Air Quality Management District, Sacramento Metropolitan Air Quality Management District, and Ventura County Air Pollution Control District. Where other agencies had taken recent regulatory action requiring control technology that was potentially more stringent than that required by current District rules, District staff evaluated the new requirements for possible implications to previous RACT findings.

Based on the foregoing, District staff finds that all District rules that apply to ozone precursor emissions fulfill RACT requirements for the 2015 8-hour Ozone NAAQS. At a minimum, District rules meet RACT or, more commonly, significantly exceed RACT. Moreover, District staff finds that all CTG sources and major non-CTG sources under its jurisdiction are controlled to RACT or better standards.

In addition to the analyses conducted for this RACT demonstration, the District has begun preliminary analyses and research for the attainment plan for the 2015 8-hour ozone standard, which will be due to EPA no later than August 3, 2022. As part of this attainment plan, the District will reevaluate the control measures analyzed in this 2020 RACT Demonstration, in addition to several other District regulations. While this demonstration is targeted at ensuring that the District's regulations meet RACT levels of emission control, the attainment plan will also examine other emission reduction opportunities that exceed RACT standards.

### **1.3.3 Public Process**

To ensure that the public has had the opportunity for meaningful participation in the development of the upcoming planning efforts, District staff provided multiple opportunities for the public to learn more about air quality and to provide the District with comments or to request more information. The District presented updates on planning efforts for attainment of the 2015 8-hour federal ozone air quality standard at a public hearing on February 20, 2020. The District hosted a public workshop to discuss the implementation requirements of the 2015 ozone standard, including the RACT SIP, on March 17, 2020. Additionally, District staff has presented regular updates regarding the development of this RACT demonstration at public meetings, including the District Governing Board, Citizens Advisory Committee (CAC), and the Environmental Justice Advisory Group (EJAG).

To ensure additional public participation, the results of the comprehensive analysis became available for public review on May 19, 2020. Public comments will be accepted and incorporated into the analysis as appropriate. The District's Governing Board will consider this report at a public hearing to be held on June 18, 2020.

The report will be subsequently transmitted to CARB, who will then submit the report to EPA by the August 3, 2020, deadline specified in the Implementation Rule.



## CH 2 CTG Source Categories & Applicable District Rules

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## Chapter 2: CTG Source Categories and Applicable District Rules

### 2.1 DISTRICT IMPLEMENTATION OF EPA CONTROL TECHNIQUES GUIDELINES

The federal Clean Air Act (CAA) requires areas designated nonattainment for ozone and classified moderate and above to implement Reasonably Available Control Technology (RACT). More specifically, CAA section 182(b)(2) and 182(f) requires the adoption of RACT level requirements for source categories covered by EPA Control Techniques Guidelines (CTG), or if a source category does not exist in the affected area, the District may submit a Negative Declaration.

### 2.2 CTG SOURCES

There are a total of 43 EPA CTGs. For this demonstration, District staff reviewed District rules for matching CTG source categories, and then compared the rule requirements to the CTG recommendations. A demonstration that District rules implement CTGs is included as part of Chapter 4.

Table 2-1 shows the CTGs promulgated by the EPA to date, and the corresponding District rules.

**Table 2-1: EPA Control Techniques Guidelines and District Rules**

Description	Pollutant	EPA Report	Date	District Rules
Design Criteria for Stage I Vapor Control Systems – Gasoline Service Stations	VOC	EPA-450/R-75-102	1975/11	4621
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume I: Control Methods for Surface Coating Operations	VOC	EPA-450/2-76-028	1976/11	<i>Note – Although often listed with the CTGs for historical reasons, this document does not define RACT for any source. It is a compilation of control techniques.</i>
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks	VOC	EPA-450/2-77-008	1977/05	4602, 4604, 4607, 4612
Control of Volatile Organic Emissions from Solvent Metal Cleaning	VOC	EPA-450/2-77-022	1977/11	4662
Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds	VOC	EPA-450/2-77-025	1977/10	4453, 4454, 4455, 4625
Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals	VOC	EPA-450/2-77-026	1977/10	4621
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume III: Surface Coating of Metal Furniture	VOC	EPA-450/2-77-032	1977/12	4603
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume IV: Surface Coating of Insulation of Magnet Wire	VOC	EPA-450/2-77-033	1977/12	Negative Declaration
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume V: Surface Coating of Large Appliances	VOC	EPA-450/2-77-034	1977/12	4603
Control of Volatile Organic Emissions from Bulk Gasoline Plants	VOC	EPA-450/2-77-035	1977/12	4621
Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed-Roof Tanks	VOC	EPA-450/2-77-036	1977/12	4623
Control of Volatile Organic Emissions from Use of Cutback Asphalt	VOC	EPA-450/2-77-037	1977/12	4641
Control Techniques for Volatile Organic Emissions from Stationary Sources	VOC	EPA-450/2-78-022	1978/05	<i>Note – This document is often listed with CTGs, but it does not define RACT for any particular source</i>
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VI: Surface Coating of Miscellaneous Metal Parts and Products	VOC	EPA-450/2-78-015	1978/06	4603
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VII: Factory Surface Coating of Flat Wood Paneling	VOC	EPA-450/2-78-032	1978/06	4606
Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment	VOC	EPA-450/2-78-036	1978/06	4453, 4454, 4455

**Table 2-1: EPA Control Techniques Guidelines and District Rules**

<b>Description</b>	<b>Pollutant</b>	<b>EPA Report</b>	<b>Date</b>	<b>District Rules</b>
Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products	VOC	EPA-450/2-78-029	1978/12	Negative Declaration
Control of Volatile Organic Emissions from Manufacture of Pneumatic Rubber Tires	VOC	EPA-450/2-78-030	1978/12	Negative Declaration
Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VIII: Graphic Arts-Rotogravure and Flexography	VOC	EPA-450/2-78-033	1978/12	4607
Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks	VOC	EPA-450/2-78-047	1978/12	4623
Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems	VOC	EPA-450/2-78-051	1978/12	4621
Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners	VOC	EPA-450/3-82-009	1982/09	4672
Control of Volatile Organic Compound Emissions from Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins	VOC	EPA-450/3-83-008	1983/11	Negative Declaration
Control of Volatile Organic Compound Equipment Leaks from Natural Gas/Gasoline Processing Plants	VOC	EPA-450/3-83-007	1983/12	4409, 4455
Control of Volatile Organic Compound Leaks from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment	VOC	EPA-450/3-83-006	1984/03	Negative Declaration
Control of Volatile Organic Compound Emissions from Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry	VOC	EPA-450/3-84-015	1984/12	Negative Declaration
Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in Synthetic Organic Chemical Manufacturing Industry	VOC	EPA-450/4-91-031	1993/08	Negative Declaration
Control of Volatile Organic Compound Emissions from Wood Furniture Manufacturing Operations	VOC	EPA-453/R-96-007	1996/04	4606
Control Techniques Guidelines for Shipbuilding and Ship Repair Operations (Surface Coating)	VOC	61 FR-44050	1996/08	Negative Declaration
Aerospace (CTG & MACT)	VOC	EPA-453/R-97-004	1997/12	4605
Control Techniques Guidelines for Industrial Cleaning Solvents	VOC	EPA-453/R-06-001	2006/09	4601, 4603, 4605, 4606, 4607, 4612, 4663, 4684
Control Techniques Guidelines for Offset Lithographic Printing and Letterpress Printing	VOC	EPA-453/R-06-002	2006/09	4607
Control Techniques Guidelines for Flexible Package Printing	VOC	EPA-453/R-06-003	2006/09	4607
Control Techniques Guidelines for Flat Wood Paneling Coatings	VOC	EPA-453/R-06-004	2006/09	4606

**Table 2-1: EPA Control Techniques Guidelines and District Rules**

Description	Pollutant	EPA Report	Date	District Rules
Control Techniques Guidelines for Paper, Film, and Foil Coatings	VOC	EPA 453/R-07-003	2007/09	4607
Control Techniques Guidelines for Large Appliance Coatings	VOC	EPA 453/R-07-004	2007/09	4603
Control Techniques Guidelines for Metal Furniture Coatings	VOC	EPA 453/R-07-005	2007/09	4603
Control Techniques Guidelines for Miscellaneous Metal and Plastic Parts Coatings	VOC	EPA 453/R-08-003	2008/09	4603, 4612
Control Techniques Guidelines for Fiberglass Boat Manufacturing Materials	VOC	EPA 453/R-08-004	2008/09	4684
Control Techniques Guidelines for Miscellaneous Industrial Adhesives	VOC	EPA 453/R-08-005	2008/09	4653
Control Techniques Guidelines for Automobile and Light-Duty Truck Assembly Coatings	VOC	EPA 453/R-08-006	2008/09	4612
Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat Operations	VOC	EPA 453/R-08-002	2008/09	Not applicable - does not recommend emission limits or work practices
Control Techniques Guidelines for the Oil and Natural Gas Industry	VOC	EPA-453/B-16-001	2016/10	Rules 4623, 4624, 4401, 4402, 4407, 4408, 4409, in combination with the requirements of California's Greenhouse Gas Emissions Standards for Crude Oil and Natural Gas Facilities <sup>1</sup>

<sup>1</sup> On October 25, 2018, CARB submitted California's Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities into the California SIP. The CARB SIP submittal states that this regulation, in combination with District rules, meets or exceeds RACT. <https://ww2.arb.ca.gov/resources/documents/submittal-oil-and-gas-reg-ca-sip>



## 2.3 CTGS WITHOUT SUBJECT FACILITIES IN THE VALLEY

If there are no facilities within the District’s boundaries that are subject to a particular CTG, the District Governing Board has two options. The first option is to create and implement a RACT rule for the CTG source category, even though there would be no source subject to the rule. The second option requires the District’s Governing Board to approve a negative declaration, as a signed Governing Board resolution, stating that there are no major sources and no minor sources that would be subject to a given CTG.

As required by the implementation rule for the 2015 8-Hour Ozone NAAQS, District staff reviewed all EPA CTGs and applicable facilities in the Valley. Based on the District’s extensive review of permit files and other sources, the District determined that there are no sources in the Valley subject to the following CTGs:

<b>Description</b>	<b>EPA Report</b>	<b>Date</b>	<b>Previous Negative Declaration Document</b>
Surface Coating for Insulation of Magnet Wire	EPA-450/2-77-033	1977/12	<ul style="list-style-type: none"> <li>Revised SIP (6/21/18)<sup>2</sup></li> </ul>
Manufacture of Synthesized Pharmaceutical Products	EPA-450/2-78-029	1978/12	<ul style="list-style-type: none"> <li>2006 RACT/SIP (8/17/06)<sup>3</sup></li> <li>2009 RACT/SIP (4/16/09)<sup>4</sup></li> <li>2014 RACT/SIP (6/19/14)<sup>5</sup></li> <li>Revised SIP (6/21/18)</li> </ul>
Manufacture of Pneumatic Rubber Tires	EPA-450/2-78-030	1978/12	<ul style="list-style-type: none"> <li>Neg Dec (12/16/10)<sup>6</sup></li> <li>2014 RACT/SIP (6/19/14)</li> <li>Revised SIP (6/21/18)</li> </ul>
Leaks from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment	EPA-450/3-83-006	1984/03	<ul style="list-style-type: none"> <li>Revised SIP (6/21/18)</li> </ul>
Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins	EPA-450/3-83-008	1983/11	<ul style="list-style-type: none"> <li>Revised SIP (6/21/18)</li> </ul>

<sup>2</sup> SJVAPCD. *Adopt Revision to State Implementation Plan to Address Federal Clean Air Act Requirements for Reasonably Available Control Technology* (2018, June 21). Retrieved from [http://www.valleyair.org/Board\\_meetings/GB/agenda\\_minutes/Agenda/2018/June/final/29.pdf](http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2018/June/final/29.pdf)

<sup>3</sup> SJVAPCD *Adopt Eight-Hour Ozone Reasonably Available Control Technology – State Implementation Plan (RACT SIP) Analysis* (2006, August 17). Retrieved from [http://www.valleyair.org/Board\\_meetings/GB/agenda\\_minutes/Agenda/2006/2006-August-17/Item-10/GB\\_Agenda\\_2006\\_Aug\\_17\\_Item-10.pdf](http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2006/2006-August-17/Item-10/GB_Agenda_2006_Aug_17_Item-10.pdf)

<sup>4</sup> SJVAPCD *Reasonably Available Control Technology (RACT) Demonstration for Ozone State Implementation Plan (SIP)* (2009, April 16) Retrieved from [https://valleyair.org/Air\\_Quality\\_Plans/docs/RACTSIP-2009.pdf](https://valleyair.org/Air_Quality_Plans/docs/RACTSIP-2009.pdf)

<sup>5</sup> SJVAPCD *2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP)* (2014, June 19). Retrieved from [https://www.valleyair.org/Air\\_Quality\\_Plans/docs/2014-RACT-SIP.PDF](https://www.valleyair.org/Air_Quality_Plans/docs/2014-RACT-SIP.PDF)

<sup>6</sup> SJVAPCD *Adopt Proposed Negative Declaration for the Control Techniques Guidelines (CTG) for Control of Volatile Organic Emissions from Manufacture of Pneumatic Rubber Tires* (2010, December 16). Retrieved from [http://valleyair.org/Board\\_meetings/GB/agenda\\_minutes/Agenda/2010/December/Agenda\\_Item\\_28\\_Dec\\_16\\_2010.pdf](http://valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2010/December/Agenda_Item_28_Dec_16_2010.pdf)

<b>Table 2-2: Negative Declarations</b>			
<b>Description</b>	<b>EPA Report</b>	<b>Date</b>	<b>Previous Negative Declaration Document</b>
Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry	EPA-450/3-84-015	1984/12	<ul style="list-style-type: none"> <li>Revised SIP (6/21/18)</li> </ul>
Reactor Processes and Distillation Operations in Synthetic Organic Chemical Manufacturing Industry	EPA-450/4-91-031	1993/08	<ul style="list-style-type: none"> <li>Revised SIP (6/21/18)</li> </ul>
Control Techniques Guidelines for Shipbuilding and Ship Repair Operations (Surface Coating)	61 FR-44050	1996/08	<ul style="list-style-type: none"> <li>2006 RACT/SIP (8/17/06)</li> <li>2009 RACT/SIP (4/16/09)</li> <li>2014 RACT/SIP (6/19/14)</li> <li>Revised SIP (6/21/18)</li> </ul>

The District Governing Board has previously adopted negative declarations for these source categories as a part of the implementation requirements for the 2008 Ozone NAAQS. District staff is recommending that the Governing Board re-affirm the previous negative declarations for these source categories with another signed resolution.

# CH 3 Major Sources & Applicable RACT Rules



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## Chapter 3: Major Sources and Applicable RACT Rules

### 3.1 MAJOR SOURCE LISTING

As discussed in Chapter 1, the District is required to evaluate the rules that apply to major sources. This list was developed through querying the District's database of current Permits to Operate to identify the facilities that have the potential to emit at least ten tons per year of either NO<sub>x</sub> or VOC. The individual facilities are listed in Table 3-1, along with the NO<sub>x</sub> and VOC rules that apply to the facility's equipment.

Table 3-1 includes the following information for each facility:

- **Region:** identifies which Valley region (Central, South, or North)<sup>1</sup> each facility is located in. This column is denoted by "C" for the Central region, "S" for the Southern region, or "N" for the Northern region.
- **ID #:** the District's facility identification number for each permitted source
- **Facility Name:** the full name of each facility
- **Facility Description:** what type of operations or processes occur at each facility to generate emissions
- **Rule Numbers:** the remaining columns are denoted with an "X" to identify each District NO<sub>x</sub> prohibitory rule that applies to that specific facility

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<sup>1</sup> Central region includes Fresno, Kings, and Madera counties; Southern region includes Kern and Tulare counties; and the Northern region includes Merced, San Joaquin, and Stanislaus counties.

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# CH 4 Rule Analysis





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## Chapter 4: Rule Analysis

### 4.1 DISTRICT RULES ANALYZED FOR RACT

The bulk of the District's effort in preparing the 2020 RACT Demonstration was to review the District's numerous NOx and VOC regulations for compliance with federal RACT requirements. Except for the rules shown in Table 4-3, District staff reviewed the applicability, stringency, and enforceability of every District NOx or VOC prohibitory rule.

As further discussed in Chapter 1, criteria for determining that RACT is satisfied includes RACT guidance from EPA, requirements per California law, and a comparison against multiple federal regulations, state regulations, and technology guidelines, as well as evaluating District rules against comparable rules from California's most technologically progressive air districts. District staff, upon application of this criteria, was then able to determine RACT status for each rule.

EPA staff conducted a comprehensive review of District rules as a part of the preparation of their 2018 approval of the District's 2014 RACT SIP, finding that the District's rules fully satisfy RACT requirements across all applicable categories.<sup>1</sup> For this demonstration, District staff conducted additional rigorous evaluation for each of the District's rules. For District rules where no applicable federal, state, or local regulations had been amended since the publication of EPA's approval of the 2014 RACT SIP, District staff certify that these rules continue to meet RACT. These rules are listed in Table 4-1. For rules where EPA, the state, or other agencies have taken recent regulatory action that could have resulted in changes to RACT for the applicable source category, District staff have included a detailed rule evaluation to demonstrate that RACT levels of control continue to be implemented by the District rule. These rules are listed in Table 4-2, and the rule evaluations are included in the following section of this Chapter.

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<sup>1</sup> 83 FR 22908- EPA Rulemaking for the California State Implementation Plan: San Joaquin Valley Unified Air Pollution Control District 2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP), available at: <https://www.federalregister.gov/documents/2018/05/17/2018-10571/air-plan-approval-california-san-joaquin-valley-unified-air-pollution-control-district-reasonably>

**Table 4-1 District Rules Found to Meet RACT and Rule History**

Rule #	Rule Title	Pollutants Controlled	CTG Source?	Date Adopted	Date Last Amended	EPA Approval Date*	Federal Register Citation
4103	Open Burning	minimize smoke impact	N	6/18/1992	4/15/2010	0/4/2012	77 FR 214
4104	Reduction of Animal Matter	air contaminants	N	5/21/1992	12/17/1992	1/2/2008	75 FR 10690
4301	Fuel Burning Equipment	NOx, SOx, combustion contaminant	N	5/21/1992	12/17/1992	5/18/1999	64 FR 26876
4313	Lime Kilns	NOx	N	3/27/2003	-	9/4/2003	68 FR 52510
4401	Steam-Enhanced Crude Oil Production Wells	VOC	N	4/11/1991	6/16/2011	11/16/2011	76 FR 70886
4402	Crude Oil Production Sumps	VOC	N	4/11/1991	12/15/2011	10/22/2012	77 FR 64427
4404	Heavy Oil Test Station – Kern County	VOC	N	5/21/1992	12/17/1992	3/9/2010	75 FR 10690
4407	In-situ Combustion Well Vents	VOC	N	5/19/1994	-	3/6/1995	60 FR 12121
4408	Glycol Dehydration Systems	VOC	N	12/19/2002	-	8/26/2003	68 FR 51187
4409	Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities	VOC	Y	4/20/2005	-	3/23/2006	71 FR 14652
4453	Refinery Vacuum Producing Devices or Systems	VOC	Y	5/21/1992	12/17/1992	9/23/2010	75 FR 57862
4454	Refinery Process Unit Turnaround	VOC	Y	5/21/1992	12/17/1992	9/23/2010	75 FR 57862
4455	Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants	VOC	Y	4/20/2005	-	3/23/2006	71 FR 14652
4565	Biosolids, Animal Manure, and Poultry Litter Operations	VOC	N	3/15/2007	-	1/17/2012	77 FR 2228
4566	Organic Material Composting Operations	VOC	N	8/18/2011	-	11/29/2012	77 FR 71129
4570	Confined Animal Facilities	VOC	N	6/15/2006	10/21/2010	1/17/2012	77 FR 2228
4603	Surface Coating of Metal Parts and Products, Plastic Parts and Products, and Pleasure Crafts	VOC	Y	4/11/1991	9/17/2009	11/1/2011	76 FR 67369
4604	Can and Coil Coating Operations	VOC	Y	4/11/1991	9/20/2007	1/19/2010	75 FR 2796
4605	Aerospace Assembly and Component Coating Operations	VOC	Y	12/19/1991	6/16/2011	11/16/2011	76 FR 70886
4606	Wood Products and Flat Wood Paneling Products Coating Operations	VOC	Y	12/19/1991	10/16/2008	10/15/2009	74 FR 52894

**Table 4-1 District Rules Found to Meet RACT and Rule History**

Rule #	Rule Title	Pollutants Controlled	CTG Source?	Date Adopted	Date Last Amended	EPA Approval Date*	Federal Register Citation
4607	Graphic Arts and Paper, Film, Foil and Fabric Coatings	VOC	Y	4/11/1991	12/18/2008	10/15/2009	74 FR 52894
4610	Glass Coating Operations	VOC	N	5/16/2002	4/17/2003	10/14/2004	69 FR 60962
4612	Motor Vehicle and Mobile Equipment Coating Operations	VOC	Y	9/21/2006	10/21/2010	2/13/2012	77 FR 7536
4621	Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants	VOC	Y	4/11/1991	12/19/2013	2/10/2015	80 FR 7345
4622	Gasoline Transfer into Motor Vehicle Fuel Tanks	gasoline vapors	Y	5/21/1992	12/19/2013	2/10/2015	80 FR 7345
4625	Wastewater Separators	VOC	Y	4/11/1991	12/15/2011	10/22/2012	77 FR 64427
4641	Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations	VOC	Y	4/11/1991	12/17/1992	3/9/2010	75 FR 10690
4642	Solid Waste Disposal Sites	VOC	N	7/20/1995	4/16/1998	7/26/2001	66 FR 38939
4651	Soil Decontamination Operations	VOC	N	4/16/1992	9/20/2007	10/30/2009	74 FR 56120
4653	Adhesives and Sealants	VOC	N	3/17/1994	9/16/2010	2/13/2012	77 FR 7536
4661	Organic Solvents	VOC	Y	5/21/1992	9/20/2007	5/5/2010	75 FR 24406
4662	Organic Solvent Degreasing Operations	VOC	Y	4/11/1991	9/20/2007	7/30/2009	74 FR 37948
4663	Organic Solvent Cleaning, Storage, and Disposal	VOC	Y	12/20/2001	9/20/2007	7/30/2009	74 FR 37948
4672	Petroleum Solvent Dry Cleaning Operations	VOC	Y	4/11/1991	12/17/1992	3/9/2010	75 FR 10690
4681	Rubber Tire Manufacturing	VOC	Y	5/16/1991	12/16/1993	8/17/1998	63 FR 43881
4682	Polystyrene, Polyethylene, and Polypropylene Products Manufacturing	VOC, CFC-11, CFC-12	Y	5/21/1992	12/15/2011	9/20/2012	77 FR 58312
4684	Polyester Resin Operations	VOC	Y	5/19/1994	8/18/2011	2/6/2012	77 FR 5709
4691	Vegetable Oil Processing Operations	VOC	N	4/11/1991	12/17/1992	1/10/2012	76 FR 55842
4693	Bakery Ovens	VOC	N	5/16/2002	-	4/26/2004	69 FR 22441
4694	Wine Fermentation and Storage Tanks	VOC	N	12/15/2005	-	11/29/2012	77 FR 71109

\*Date of EPA Federal Register Notice of final approval adding rule to SIP

\*\*On August 17, 2018, EPA published a Final Rule approving the District's RACT demonstration for the 2008 federal ozone standard, which included a demonstration that the rules listed in this table met RACT [83 FR 41006].

**Table 4-2: District Rules With Additional Rule Evaluations Included**

Rule #	Rule Title	Pollutants Controlled	CTG Source?	Date Adopted	Date Last Amended	EPA Approval Date	Federal Register Citation
4306	Boilers, Steam Generators, and Process Heaters – Phase 3	NOx, CO	Y	9/18/2003	10/16/2008	1/13/2010	75 FR 1715
4307	Boilers, Steam Generators, and Process Heaters - 2.0 MMBtu/hr to 5.0 MMBtu/hr	NOx, CO	Y	12/15/2005	4/21/2016	8/14/2017	82 FR 37817
4308	Boilers, Steam Generators, and Process Heaters - 0.075 MMBtu/hr to less than 2.0 MMBtu/hr	NOx, CO	Y	10/20/2005	11/14/2013	2/12/2015	80 FR 7803
4309	Dryers, Dehydrators and Ovens	NOx, CO	N	12/15/2005	-	5/30/2007	72 FR 29886
4311	Flares	NOx, VOC	N	6/20/2002	6/18/2009	11/3/2011	76 FR 68106
4352	Solid Fuel Fired Boilers, Steam Generators and Process Heaters	NOx, CO	N	9/14/1994	12/15/2011	11/6/2012	77 FR 66548
4354	Glass Melting Furnaces	NOx, CO, VOC	N	9/14/1994	5/19/2011	1/31/2013	78 FR 6740
4623	Storage of Organic Liquids	VOC	Y	4/11/1991	5/19/2005	9/13/2005	70 FR 53937
4624	Transfer of Organic Liquid	VOC	N	4/11/1991	12/20/2007	10/15/2009	74 FR 52894
4702	Internal Combustion Engines	NOx, CO, VOC	N	8/21/2003	11/14/2013	4/25/2016	81 FR 24029
4703	Stationary Gas Turbines	NOx	N	8/18/1994	9/20/2007	10/21/2009	74 FR 53888

**Table 4-3: District NOx and VOC Rules Not Subject to RACT Analysis**

Rule #	Rule Title	Pollutants Controlled	CTG Source?	Date Adopted	Date Last Amended	Notes
4106	Prescribed Burning and Hazard Reduction Burning	VOC, NOx, SOx, PM	N	6/21/2001	-	This rule does not regulate any major sources
4304	Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters	NOx, CO	N	10/19/1995	-	There are no NOx and VOC emission limits associated with this rule.
4305	Boilers, Steam Generators, and Process Heaters - Phase 2	NOx, CO	Y	12/16/1993	8/21/2003	This rule was superceded by Rules 4306, 4307, and 4308
4351	Boilers, Steam Generators, and Process Heaters - Phase 1	NOx	N	10/20/1994	8/21/2003	This rule was superceded by Rules 4306, 4307, and 4308
4403	Components Serving Light Crude Oil or Gases at Light Crude Oil and Gas Production Facilities and Components at Natural Gas Processing Facilities	VOC	N	4/11/1991	4/20/2005	This rule was superceded by Rule 4409



**Table 4-3: District NOx and VOC Rules Not Subject to RACT Analysis**

Rule #	Rule Title	Pollutants Controlled	CTG Source?	Date Adopted	Date Last Amended	Notes
4405	Oxides of Nitrogen Emissions from Existing Steam Generators Used in Thermally Enhanced Oil Recovery – Central and Western Kern County Fields	NOx	N	5/21/1992	12/17/1992	This rule was superceded by Rule 4306
4451	Valves, Pressure Relief Valves, Flanges, Threaded Connections and Process Drains at Petroleum Refineries and Chemical Plants	VOC	N	4/11/1991	4/20/2005	This rule was superceded by Rule 4455
4452	Pump and Compressor Seals at Petroleum Refineries and Chemical Plants	VOC	N	4/11/1991	4/20/2005	This rule was superceded by Rule 4455
4601	Architectural Coatings	VOC	N	4/11/1991	4/16/2020	This is an area source rule and is not required to meet RACT <sup>2</sup>
4602	Motor Vehicle and Mobile Equipment Coating Operations	VOC	Y	4/11/1991	7/21/2006	This rule was superceded by Rule 4612
4652	Coatings and Ink Manufacturing	VOC	N	5/21/1992	12/17/1992	This rule does not regulate any major sources
4692	Commercial Charbroiling	VOC, PM	N	3/21/2002	12/21/2018	This rule does not regulate any major sources
4701	Internal Combustion Engines – Phase 1	NOx, CO, VOC	N	5/21/1992	8/21/2003	This rule was superceded by Rule 4702
4902	Residential Water Heaters	VOC	N	6/17/1993	3/19/2009	This rule does not regulate any major sources
4905	Natural Gas-Fired, Fan-Type Central Furnaces	NOx	N	10/20/2005	6/21/2018	This rule does not regulate any major sources
9310	School Bus Fleets	NOx, PM	N	9/21/2006	-	This rule does not regulate any major sources

<sup>2</sup> U.S. EPA. Region IX Air Division. Technical Support Document for EPA's *San Joaquin Valley Unified Air Pollution Control District 2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP)* and *San Joaquin Valley Unified Air Pollution Control District Supplement to the 2014 Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) for the 8-hour Ozone Standard (Negative Declarations and J.R. Simplot Permit to Operate)*. Prepared by Stanley Tong. (2018, May). <https://www.regulations.gov/document?D=EPA-R09-OAR-2018-0272-0002>

## **RULE EVALUATIONS**

## 4.2 RULE 4306 (BOILERS, STEAM GENERATORS, AND PROCESS HEATERS – PHASE 3)

### District Rule 4306 Description

District Rule 4306 was adopted September 18, 2003, and was most recently amended October 16, 2008. The purpose of Rule 4306 is to limit NO<sub>x</sub> and CO emissions from boilers, steam generators, and process heaters. The rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, and process heater with a rated heat input of 5.0 million Btu/hr or greater. This source category includes a wide range of industries including but not limited to medical facilities, educational institutions, office buildings, prisons, military facilities, hotels and industrial industries. The rule establishes NO<sub>x</sub> and CO emission limits depending on the class and category for boilers, steam generators, and process heaters.

As a complementary rule to Rule 4306, Rule 4320 goes beyond RACT requirements. EPA approved Rule 4320 as a SIP-strengthening rule after they approved Rule 4306 as meeting RACT requirements.

### How does District Rule 4306 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines or Maximum Achievable Control Technologies applicable to this source category.

#### A. EPA Alternative Control Techniques (ACT)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACTs have not been updated since Rule 4306 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document – NO<sub>x</sub> Emissions from Industrial/Commercial/Institutional Boilers (EPA-453/R-94-022 1994/03)*

#### B. New Source Performance Standards (NSPS)

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPSs have not been updated since Rule 4306 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- 40 CFR 60 Subpart D - Standards of Performance for Fossil-Fuel Fired Steam Generators (2007/06)
- 40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (2012/04)

**C. National Emission Standards for Hazardous Air Pollutants (NESHAP)**

District staff conducted a comprehensive evaluation of NESHAP requirements. The following NESHAPs have not been updated since Rule 4306 was approved as meeting RACT requirements through EPA’s approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- 40 CFR 63 Subpart DDDDD - NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters (2015/11)

**State Regulations**

There are no state regulations that apply to this source category.

**How does District Rule 4306 compare to rules in other air districts?**

District staff compared emission limits, optional control requirements, and work practices in District Rule 4306 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 9, Rule 7 (Amended May 4, 2011)
- Bay Area AQMD - Regulation 9, Rule 10 (Amended October 16, 2013)
- Bay Area AQMD - Regulation 9, Rule 11 (Amended May 17, 2000)
- Sacramento Metropolitan AQMD - Rule 411 (Amended August 23, 2007)
- Ventura County APCD - Rule 74.15 (Amended November 8, 1994)
- South Coast AQMD - Rule 1146 (Amended December 7, 2018)
- South Coast AQMD - Rule 1109 (Amended August 5, 1988)

Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4306 continues to implement RACT levels of control. For more recently amended rules, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

**South Coast AQMD**

- SCAQMD Rule 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)

	<b>SJVAPCD 4306</b>	<b>SCAQMD 1146</b>
<b>Applicability</b>	Any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.	Boilers, steam generators, and process heaters of equal to or greater than 5 million Btu per hour rated heat input

	SJVAPCD 4306	SCAQMD 1146
		capacity used in industrial, institutional, and commercial operations.*
<b>Exemptions</b>	<p>Units regulated by other District rules such as solid fuel fired units, dryers, glass melting furnaces, kilns, and smelters.</p> <p>Any units while burning any fuel other than PUC quality natural gas that:                      Burns non-PUC gas no more than 168 cumulative hours in a calendar year plus 48 hours per calendar year for equipment testing; NOx emission do not exceed 150 ppm.</p>	<p>(1) Boilers used by electric utilities to generate electricity; and</p> <p>(2) Boilers and process heaters with a rated heat input capacity greater than 40 million Btu per hour that are used in petroleum refineries; and</p> <p>(3) Sulfur plant reaction boilers.</p> <p>(4) RECLAIM facilities (NOx emissions only)</p>
<b>Requirements</b>		
Category A Units 5-20 MMBtu/hr Except Categories C through G units	9 ppm standard 6 ppm enhanced	Non-RECLAIM 7 ppm for fire tube units 9 ppm for all other units  RECLAIM 9 ppm for fire tube units 12 ppm for all other units
Category B Units > 20 MMBtu/hr Except Categories C through G units	7 ppm standard 5 ppm enhanced	20-75 MMBtu/hr Non-RECLAIM 7 ppm for fire tube units 9 ppm for all other units RECLAIM 9 ppm for fire tube units 12 ppm for all other units  75 MMBtu/hr or greater Non-RECLAIM 5 ppm RECLAIM 9 ppm
Category C.1 Oilfield Steam Generators 5-20 MMBtu/hr	9 ppm standard 6 ppm enhanced	SCAQMD Rule 1146 applies to Industrial, Institutional, and Commercial Units. Oilfield steam generators do not fall into either one of these categories per definitions in the rule.
Category C.2 Oilfield Steam Generators >20 MMBtu/hr	7 ppm standard 5 ppm enhanced	
Category C.3 Oilfield Steam Generators fired on less than 50% PUC quality gas	9 ppm	
Category D.1 Refinery Units 5-20 MMBtu/hr	9 ppm standard 6 ppm enhanced	SCAQMD Rule 1146 applies to Industrial, Institutional, and Commercial Units. Petroleum Refineries do not fall into either one of these categories per definitions in the rule.
Category D.2 Refinery Units 20-110 MMBtu/hr	6 ppm standard 5 ppm enhanced	
Category D.3 Refinery Units >110 MMBtu/hr	5 ppm	

	SJVAPCD 4306	SCAQMD 1146
Category D.4 Refinery Units fired on less than 50% PUC quality gas	9 ppm	
Category E Units with annual heat input >1.8 billion Btu/yr but <30 billion Btu/yr	9 ppm	For units using 9.0 billion Btu/yr or less, tune up twice a year. For units over that limit, units must meet the following applicable limit: 25 ppm landfill gas units, 15 ppm digester gas units, otherwise, for other units: 20-75 MMBtu/hr Non-RECLAIM 7 ppm for fire tube units 9 ppm for all other units RECLAIM 9 ppm for fire tube units 12 ppm for all other units  75 MMBtu/hr or greater Non-RECLAIM 5 ppm RECLAIM 9 ppm
Category F Wastewater Treatment Facilities firing on less than 50% PUC quality gas	9 ppm	15 ppm for digester gas fired units
Category G Units operated by a small producer in which the rated heat input of each burner is less than or equal to 5 MMBtu/hr, but the total rated heat input of all the burners in a unit is rated between 5 MMBtu/hr and 20 MMBtu/hr, and in which the products of combustion do not come in contact with the products of combustion of any other burner.	9 ppm	Non-RECLAIM 7 ppm for fire tube units 9 ppm for all other units  RECLAIM 9 ppm for fire tube units 12 ppm for all other units
Additional Categories Included in SCAQMD Rule 1146		
<u>Atmospheric Units</u> District Rule 4306 does not establish limits specifically for atmospheric units. Therefore, these units would be subject to the limits in Category A or B.	Category A 9 ppm standard 6 ppm enhanced  Category B 7 ppm standard 5 ppm enhanced	12 ppm NOx (natural gas)
<u>Digester gas</u> District Rule 4306 does not establish limits specifically for atmospheric units. Therefore, these units would be subject to the limits in Category A or B.	Category A 9 ppm standard 6 ppm enhanced  Category B 7 ppm standard 5 ppm enhanced	15 ppm NOx
<u>Landfill gas</u>	Category A 9 ppm standard	25 ppm NOx



	<b>SJVAPCD 4306</b>	<b>SCAQMD 1146</b>
District Rule 4306 does not limit specifically for units fired with landfill gas. Therefore, these units would be subject to the limits in Category A or B.	6 ppm enhanced  Category B 7 ppm standard 5 ppm enhanced	
<u>Other units fired on gaseous fuel</u> This is a general category in SCAQMD's rule that is covered under multiple categories in Rule 4306	5 ppm to 9 ppm (as shown in the above categories)	30 ppm NOx

Comparison of these rules revealed that the NOx limits in recently amended SCAQMD Rule 1146 are potentially more stringent for several unit categories in District Rule 4306, while in other categories, District Rule 4306 is more stringent. SCAQMD Rule 1146 only applies to units at industrial, institutional, and commercial operations, whereas District Rule 4306 applies to any gaseous fuel or liquid fuel fired boilers, steam generators, or process heaters with a total rated heat input > 5 MMBtu/hr. In adopting Rule 1146, SCAQMD estimated a cost-effectiveness range of \$20,000 to \$30,000 per ton of NOx emissions reduced, significantly higher than accepted RACT cost-effectiveness levels.

RACT is intended as the minimum level of control that all ozone nonattainment areas must achieve for existing sources. RACT is not intended as the only level of control needed for all nonattainment areas to attain the ozone standard. RACT is also not intended to be the most stringent level of control in an area's attainment strategy. Given the District's existing stringent limits, the cost-effectiveness associated with the installation of additional controls will be far in excess of RACT cost-effectiveness levels.

### **Conclusion**

District Rule 4306 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

## 4.3 RULE 4307 (BOILERS, STEAM GENERATORS, AND PROCESS HEATERS – 2.0 MMBTU/HR TO 5.0 MMBTU/HR)

### District Rule 4307 Description

Rule 4307 was adopted on December 15, 2005, and was most recently amended April 21, 2016. The purpose of Rule 4307 is to limit NO<sub>x</sub> and CO emissions from boilers, steam generators, and process heaters. The rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, and process heater with a rated heat input of 2.0 MMBtu/hr up to and including 5.0 MMBtu/hr. This source category includes a wide range of industries including but not limited to medical facilities, educational institutions, office buildings, prisons, military facilities, hotels and industrial facilities.

### How does District Rule 4307 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines, New Source Performance Standards, or Maximum Achievable Control Technologies applicable to this source category.

#### A. EPA - Alternative Control Techniques (ACT)

ACTs address potential emission control techniques for units with the potential to emit more than 25 tons of NO<sub>x</sub> per year. No units covered by District Rule 4307 have the potential to emit 25 tons per year and therefore ACTs are not directly applicable to this source category. However, ACTs do discuss various control technologies, and so the District has examined them. The following ACTs have not been updated since Rule 4307 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Process Heaters (EPA-453/R-93-034 1993/09)*
- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Industrial/Commercial/ Institutional Boilers (EPA-453/R-94-022 1994/03)*
- *Alternative Control Techniques Document-NO<sub>x</sub> Emissions from Utility Boilers (EPA-453/R-94-023 1994/03)*

#### B. National Emission Standards for Hazardous Air Pollutants (NESHAPs)

District staff conducted a comprehensive evaluation of NESHAP requirements. The following NESHAPs have not been updated since Rule 4307 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this

approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- 40 CFR 63 Subpart DDDDD - NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (2015/11)

### State Regulations

There are no state regulations that apply to this source category.

### How does District Rule 4307 compare to rules in other air districts?

District staff compared emission limits, optional control requirements, and work practices in District Rule 4307 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 9, Rule 7 (Amended May 4, 2011)
- Bay Area AQMD - Regulation 9, Rule 10 (Amended October 16, 2013)
- Sacramento Metropolitan AQMD - Rule 411 (Amended August 23, 2007)
- Ventura County APCD - Rule 74.15.1 (Amended June 23, 2015)
- South Coast AQMD - Rule 1146.1 (Amended December 7, 2018)
- South Coast AQMD - Rule 1146.2 (Amended December 7, 2018)

Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4307 continues to implement RACT levels of control. For more recently amended rules, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

### South Coast AQMD

- SCAQMD Rule 1146.1 (Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)

	SJVAPCD Rule 4307	SCAQMD Rule 1146.1
<b>Applicability</b>	Rule applies to any gaseous fuel or liquid fuel fired boilers, steam generators and process heaters rated $\geq 2.0$ MMBtu/hr to $\leq 5.0$ MMBtu/hr	Rule applies to boilers, steam generator and process heaters $> 2$ MMBtu/hr to $< 5$ MMBtu/hr
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>• Solid fuel fired units</li> <li>• Dryers and glass melting furnaces</li> <li>• Kilns, humidifiers, and smelters where the products of combustion come into direct contact with the material to be heated</li> <li>• Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines</li> <li>• Burning other fuel during PUC quality natural gas curtailment as long as other</li> </ul>	<ul style="list-style-type: none"> <li>• Units at a RECLAIM or former RECLAIM facility subject to a NOx limit in a different rule</li> <li>• Units at municipal sanitation service facility subject to a NOx emission limit in Reg XI adopted or amended after 12/7/18</li> </ul>

	SJVAPCD Rule 4307	SCAQMD Rule 1146.1
	fuel not be burned for more than 168 hour/year plus 48 hour/year for equipment testing and NOx emissions shall not exceed 150 ppmv or 0.215 lb/MMBtu	
<b>Requirements</b>	<p><u>Existing units limited to 1.8 billion Btu/yr</u></p> <ul style="list-style-type: none"> <li>• Install &amp; maintain non-resettable fuel flow meter; AND</li> <li>• Tune-in the unit twice per calendar year, OR</li> <li>• Operate and maintain the stack O<sub>2</sub> concentrations at 3% by vol. or less, OR</li> <li>• Certify unit to comply with 30 ppmv NOx and 400 ppmv CO (gaseous fuel) when annual limit is exceeded; if unit is replaced then comply with limits of New and Replacement units (see below).</li> </ul> <p><u>Existing atmospheric units in oilfield or refinery; each glycol reboiler; or each unit with heat input &gt; 1.8 to &lt; 5 billion Btu/yr:</u></p> <ul style="list-style-type: none"> <li>• 30 ppmv NOx (gaseous fuel)</li> <li>• 40 ppmv NOx (liquid fuel-fired units)</li> </ul> <p><u>New and Replacement units:</u></p> <ul style="list-style-type: none"> <li>• 12 ppmv NOx (atmospheric units)</li> <li>• 9 ppmv NOx (non-atmospheric units)</li> </ul>	<p><u>Existing units (in operation prior to 9/5/08, at non-RECLAIM facilities, or in operation prior to December 7, 2019 at RECLAIM or former RECLAIM) limited to ≤1.8 billion Btu/yr</u></p> <ul style="list-style-type: none"> <li>• Operate and maintain stack O<sub>2</sub> concentrations at 3% by vol. or less for any 15-consecutive-minute averaging period, OR</li> <li>• Tune-in the unit twice per year (4 to 8 months apart)</li> </ul> <p><u>All other units (not mentioned below)</u></p> <ul style="list-style-type: none"> <li>• 30 ppmv NOx or for natural gas-fired units 0.036 lb-NOx/MMBtu</li> </ul> <p><u>New and replacement units:</u></p> <ul style="list-style-type: none"> <li>• 7 ppmv NOx for any fire-tube boilers on natural gas**</li> <li>• 9 ppmv NOx for natural gas fired units excluding fire-tube boilers, atmospheric units, and thermal fluid heaters***</li> <li>• 12 ppmv NOx for natural gas-fired atmospheric units</li> <li>• 12 ppmv NOx for natural gas-fired thermal fluid heaters****</li> <li>• 15 ppmv NOx for digester gas fired units</li> <li>• 25 ppmv NOx for landfill gas fired units</li> <li>• Weight average limit for multi-fuel units (e.g., units using both natural gas and digester gas, etc.);</li> </ul> <p><i>**Units with ≤12 ppmv NOx, &gt;9 ppmv NOx, and ≤ 9 ppmv NOx installed, modified, or issued permits prior to 12/7/18, at a non-RECLAIM facility will become subject to the 7 ppm NOx limit when 50% or more of unit's burner are replaced, or by December 7, 2033, whichever is earlier.</i></p> <p><i>***Units with ≤12 ppmv NOx and &gt;9 ppmv NOx installed, modified or issued permits prior to 9/5/08, at a non-RECLAIM facility will become subject to the 9 ppmv NOx limit when 50% or more of unit's burner are replaced, or by December 7, 2033, whichever is earlier.</i></p> <p><i>**Units with ≤30 ppmv NOx installed, modified, or issued permits prior to 12/7/18, at a non-RECLAIM facility will become subject to the 12 ppm NOx limit when 50% or more of unit's burner are replaced, or by December 7, 2033, whichever is earlier.</i></p>

\*Unless otherwise stated, all ppmv values are on a dry basis and corrected to 3% stack oxygen by volume.

District Rule 4307 is at least as stringent as SCAQMD Rule 1146.1 because it contains comparable NOx limits for similarly rated units. Rule 4307 also has lower NOx emission limits for units fired on fuels other than natural gas. Therefore, District Rule 4307 is as stringent as or more stringent than SCAQMD Rule 1146.1.

**South Coast AQMD**

- SCAQMD Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters)

	<b>SJVAPCD Rule 4307</b>	<b>SCAQMD Rule 1146.2</b>
<b>Applicability</b>	Rule applies to any gaseous fuel or liquid fuel fired boilers, steam generators and process heaters rated $\geq 2.0$ MMBtu/hr to $\leq 5.0$ MMBtu/hr	Applicable to natural gas-fired water heaters, boilers and process heaters with rated heat input capacity of $\leq 2$ MMBtu/hr
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>• Solid fuel fired units</li> <li>• Dryers and glass melting furnaces</li> <li>• Kilns, humidifiers, and smelters where the products of combustion come into direct contact with the material to be heated</li> <li>• Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines</li> <li>• Burning other fuel during PUC quality natural gas curtailment as long as other fuel not be burned for more than 168 hour/year plus 48 hour/year for equipment testing and NOx emissions shall not exceed 150 ppmv or 0.215 lb/MMBtu</li> </ul>	<ul style="list-style-type: none"> <li>• Units used in recreational vehicles.</li> <li>• Units subject to SCAQMD Rule 1121 (control of nitrogen oxides from residential type, natural gas-fired water heaters) – Rule 1121 applies to units rated at <math>&lt; 0.075</math> MMBtu/hr</li> <li>• Units at a RECLAIM or former RECLAIM facility subject to a NOx limit in a different rule</li> <li>• Units at municipal sanitation service facility subject to a NOx emission limit in Reg XI adopted or amended after 12/7/18</li> <li>• The provision of paragraph (c)(3), (c)(4) and (c)(5) shall not apply to:</li> <li>• Any residential unit*</li> <li>• Units with <math>&gt; 0.4</math> &amp; <math>\leq 2</math> MMBtu/hr, demonstrated to use less than 9,000 therms during every calendar year</li> </ul>
<b>Requirements</b>	<p><u>Existing units limited to 1.8 billion Btu/yr</u></p> <ul style="list-style-type: none"> <li>• Install &amp; maintain non-resettable fuel flow meter; AND</li> <li>• Tune-in the unit twice per calendar year, OR</li> <li>• Operate and maintain the stack O<sub>2</sub> concentrations at 3% by vol. or less, OR</li> <li>• Certify unit to comply with 30 ppmv NOx and 400 ppmv CO (gaseous fuel) when annual limit is exceeded; if unit is replaced then comply with limits of New and Replacement units (see below).</li> </ul> <p><u>Existing atmospheric units in oilfield or refinery; each glycol reboiler; or each unit with heat input &gt; 1.8 to &lt; 5 billion Btu/yr:</u></p> <ul style="list-style-type: none"> <li>• 30 ppmv NOx (gaseous fuel)</li> <li>• 40 ppmv NOx (liquid fuel-fired units)</li> </ul> <p><u>New and Replacement units:</u></p> <ul style="list-style-type: none"> <li>• 12 ppmv NOx (atmospheric units)</li> <li>• 9 ppmv NOx (non-atmospheric units)</li> </ul>	<p><u>Units <math>&gt; 0.4</math> to <math>\leq 2</math> MMBtu/hr:</u></p> <ul style="list-style-type: none"> <li>• 14 ng-NOx/J of heat output or 20 ppmv NOx (or less)</li> </ul> <p><u>Units (excluding pool heaters) <math>\leq 0.4</math> MMBtu/hr:</u></p> <ul style="list-style-type: none"> <li>• 14 ng-NOx/J of heat output or 20 ppmv NOx (or less)</li> </ul>

\*Unless otherwise stated, all ppmv values are on a dry basis and corrected to 3% stack oxygen by volume.

District Rule 4307 is more stringent than SCAQMD Rule 1146.2 because it contains more stringent NOx limits for similarly rated units and applies to a wider range of fuel types.

**Conclusion**

District Rule 4307 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

## 4.4 RULE 4308 (BOILERS, STEAM GENERATORS, AND PROCESS HEATERS - 0.075 MMBTU/HR TO LESS THAN 2.0 MMBTU/HR)

### District Rule 4308 Description

The purpose of this rule is to limit NO<sub>x</sub> and CO emissions from units within this source category. As a point of sale rule, Rule 4308 achieves emissions reductions as units subject to the rule are replaced over time. This point-of-sale approach allows the District to achieve NO<sub>x</sub> emission reductions without forcing immediate replacement of existing units to comply with rule requirements and thus placing an undue financial burden on the consumer. This rule has resulted in more than 93% control of emissions from this source category.

Rule 4308 was adopted on October 20, 2005 to establish NO<sub>x</sub> emissions limits for units that were previously exempt from District regulations because of their small size. The rule was amended in December 2009 to lower the NO<sub>x</sub> emissions limits to 20 ppmv for units fired on natural gas, with the exception of instantaneous water heaters and pool heaters greater than or equal to 0.075 MMBtu/hr but less than or equal to 0.4 MMBtu/hr. In 2013, the rule was amended to lower the NO<sub>x</sub> emission limit for instantaneous water heaters 0.075 MMBtu/hr to 0.4 MMBtu/hr to 20 ppmv. EPA published a direct final approval of the 2013 amendments to Rule 4308 on February 12, 2015.

### How does District Rule 4308 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, or Maximum Achievable Control Technologies applicable to boilers, steam generators, and process heaters with a rated heat input capacity greater than or equal to 0.075 Million Btu/hr and up to but not including 2.0 Million Btu/hr.

#### A. EPA - Alternative Control Techniques (ACT)

ACTs address potential emission control techniques for units with the potential to emit more than 25 tons of NO<sub>x</sub> per year. No units subject to District Rule 4308 have the potential to emit 25 tons per year; therefore, ACTs are not directly applicable to this source category. However, ACTs do discuss various control technologies, and so the District has examined them. The following ACTs have not been updated since Rule 4308 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Process Heaters) (EPA-453/R-93-034 1993/09)*



- *Alternative Control Techniques Document - NOx Emissions from Industrial/Commercial/ Institutional Boilers (EPA-453/R-94-022 1994/03)*
- *Alternative Control Techniques Document - NOx Emissions from Utility Boilers (EPA-453/R-94-023 1994/06)*

### State Regulations

There are no state regulations that apply to this source category.

### How does District Rule 4308 compare to rules in other air districts?

District staff compared the emission limits, optional control requirements, and work practices in District Rule 4308 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 9, Rule 6 (Amended November 7, 2007)
- Bay Area AQMD - Regulation 9, Rule 7 (Amended May 4, 2011)
- Bay Area AQMD - Regulation 9, Rule 10 (Amended October 16, 2013)
- Sacramento Metropolitan AQMD - Rule 411 (Amended August 23, 2007)
- Sacramento Metropolitan AQMD - Rule 414 (Amended October 25, 2018)
- Ventura County APCD - Rule 74.11.1 (Amended September 11, 2012)
- Ventura County APCD - Rule 74.15.1 (Amended June 23, 2015)
- South Coast AQMD - Rule 1146.2 (Amended December 7, 2018)

Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4308 continues to implement RACT levels of control. For more recently amended rules, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

### Sacramento Metropolitan AQMD

- SMAQMD Rule 414 (Water Heaters, Boilers and Process Heaters Rated Less than 1 MMBtu/hr)

	SJVAPCD Rule 4308	SMAQMD Rule 414
<b>Applicability</b>	Applicable to boilers, steam generators and process heaters with rated heat input capacity of $\geq 0.075$ MMBtu/hr and $< 2$ MMBtu/hr	Applicable to boilers, steam generators, and process heaters fired on <u>gaseous</u> or <u>non-gaseous</u> fuels with a rated capacity of $< 1$ MMBtu/hr
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>• Units installed in manufactured homes.</li> <li>• Units installed in recreational vehicles.</li> <li>• Hot water pressure washers.</li> </ul>	<ul style="list-style-type: none"> <li>• Water heaters in recreational vehicles</li> <li>• Pool/spa heater with a heat input rate <math>&lt; 0.075</math> MMBtu/hr.</li> <li>• Water heaters, boilers and process heater fired on LPG fuel.</li> </ul>
<b>Requirements</b>	1) <u>Units <math>\geq 0.075</math> to <math>\leq 0.4</math> MMBtu/hr (except, instantaneous water heater and pool heaters below):</u> <ul style="list-style-type: none"> <li>• PUC gas - 20 ppmv (0.024 lb/MMBtu);</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul>	<u>Units <math>&lt; 0.075</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• 40 ng/J of heat output or 55 ppm NOx for mobile home units</li> <li>• 10 ng/J of heat output or 15 ppm NOx for all other units</li> </ul>



	SJVAPCD Rule 4308	SMAQMD Rule 414
	2) <u>Units &gt;0.4 to &lt;2.0 MMBtu/hr (except, instantaneous water heater and pool heaters below):</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.024 lb/MMBtu)</li> <li>• Non-PUC or liquid – 30 ppmv (0.036 lb/MMBtu)</li> </ul> 3) <u>Instantaneous water heaters ≥0.075 to ≤0.4 MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.024 lb/MMBtu)</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul> 4) <u>Instantaneous water heaters &gt;0.4 to &lt;2.0 MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.024 lb/MMBtu)</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul> 5) <u>Pool heaters ≥0.075 to ≤0.4 MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 55 ppmv (0.068 lb/MMBtu)</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul> 6) <u>Pool heaters &gt;0.4 to &lt;2.0 MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.068 lb/MMBtu)</li> <li>• Non-PUC or liquid – 30 ppmv (0.036 lb/MMBtu)</li> </ul>	<u>Units ≥ 0.075 to &lt;0.4 MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• 40 ng/J of heat output or 55 ppm NOx for pool/spa units</li> <li>• 14 ng/J of heat output or 20 ppm NOx for all other units</li> </ul> <u>Units ≥ 0.4 to &lt;1 MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• 14 ng/J of heat output or 20 ppm NOx</li> </ul>

For the majority of the categories, District Rule 4308 is as stringent as or more stringent than SMAQMD Rule 414.

**South Coast AQMD**

- SCAQMD Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters)

	SJVAPCD Rule 4308	SCAQMD 1146.2
<b>Applicability</b>	Applicable to boilers, steam generators and process heaters with rated heat input capacity of ≥0.075 MMBtu/hr and <2 MMBtu/hr	Applicable to <u>natural gas-fired</u> water heaters, boilers and process heaters with rated heat input capacity of ≤2 MMBtu/hr
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>• Units installed in manufactured homes.</li> <li>• Units installed in recreational vehicles.</li> <li>• Hot water pressure washers.</li> </ul>	<ul style="list-style-type: none"> <li>• Units used in recreational vehicles.</li> <li>• Units subject to SCAQMD Rule 1121 (control of nitrogen oxides from residential type, natural gas-fired water heaters) – Rule 1121 applies to units rated at &lt;0.075 MMBtu/hr</li> <li>• Units at a RECLAIM or former RECLAIM facility subject to a NOx limit in a different rule</li> <li>• Units at municipal sanitation service facility subject to a NOx emission limit in Reg XI adopted or amended after 12/7/18</li> <li>• The provision of paragraph (c)(3), (c)(4) and (c)(5) shall not apply to:                             <ul style="list-style-type: none"> <li>- Any residential unit*</li> <li>- Units with &gt;0.4 &amp; ≤2 MMBtu/hr, demonstrated to use less than 9,000 therms during every calendar year</li> </ul> </li> </ul>

	SJVAPCD Rule 4308	SCAQMD 1146.2
<b>Requirements</b>	1) <u>Units <math>\geq 0.075</math> to <math>\leq 0.4</math> MMBtu/hr (except, instantaneous water heater and pool heaters below):</u> <ul style="list-style-type: none"> <li>• PUC gas - 20 ppmv NOx (0.024 lb/MMBtu);</li> <li>• Non-PUC or liquid – 77 ppmv NOx (0.093 lb/MMBtu)</li> </ul> 2) <u>Units <math>&gt; 0.4</math> to <math>&lt; 2.0</math> MMBtu/hr (except, instantaneous water heater and pool heaters below):</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv NOx (0.024 lb/MMBtu)</li> <li>• Non-PUC or liquid – 30 ppmv (0.036 lb/MMBtu)</li> </ul> 3) <u>Instantaneous water heaters <math>\geq 0.075</math> to <math>\leq 0.4</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.024 lb/MMBtu)</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul> 4) <u>Instantaneous water heaters <math>&gt; 0.4</math> to <math>&lt; 2.0</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.024 lb/MMBtu)</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul> 5) <u>Pool heaters <math>\geq 0.075</math> to <math>\leq 0.4</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 55 ppmv (0.068 lb/MMBtu)</li> <li>• Non-PUC or liquid – 77 ppmv (0.093 lb/MMBtu)</li> </ul> 6) <u>Pool heaters <math>&gt; 0.4</math> to <math>&lt; 2.0</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• PUC gas – 20 ppmv (0.068 lb/MMBtu)</li> <li>• Non-PUC or liquid – 30 ppmv (0.036 lb/MMBtu)</li> </ul>	<u>Units <math>&gt; 0.4</math> to <math>\leq 2</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• 14 ng-NOx/J of heat output or 20 ppmv NOx (or less)</li> </ul> <u>Units (excluding pool heaters) <math>\leq 0.4</math> MMBtu/hr:</u> <ul style="list-style-type: none"> <li>• 14 ng-NOx/J of heat output or 20 ppmv NOx (or less)</li> </ul>

\*Unless otherwise stated, all ppmv values in the table are ppmv @ 3% O<sub>2</sub>

The District evaluated the requirements contained within SCAQMD Rule 1146.2, and found no requirements to be more stringent than those already in District Rule 4308.

### Conclusion

District Rule 4308 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

## 4.5 RULE 4309 (DRYERS, DEHYDRATORS, AND OVENS)

### District Rule 4309 Description

Rule 4309 (Dryers, Dehydrators, and Ovens) was adopted on December 15, 2005 to limit NO<sub>x</sub> and CO emissions from dryers, dehydrators, or ovens fired on gaseous, liquid, or gaseous and liquid fuel sequentially that have a total rated heat input for the unit of 5.0 MMBtu/hr. The rule limits NO<sub>x</sub> emissions to between 3.5-12 ppmvd for four categories of equipment. The adoption of Rule 4309 has considerably reduced NO<sub>x</sub> emissions to ultra-low levels.

### How does District Rule 4309 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, or Maximum Achievable Control Technologies applicable to this source category.

#### A. Alternative Control Techniques (ACT)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACTs have not been updated since Rule 4309 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Cement Manufacturing (EPA-453/R-94-004 1994/03)*

#### State Regulations

There are no state regulations applicable to this source category.

### How does District Rule 4309 compare to rules in other air districts?

District staff compared emission limits, optional control requirements, and work practices in District Rule 4309 to comparable requirements in rules from the following nonattainment areas:

- Sacramento Metropolitan AQMD - Rule 419 (Amended October 25, 2018)
- Ventura County APCD - Rule 74.34 (Adopted December 13, 2016)
- South Coast AQMD - Rule 1147 (Amended July 7, 2017)

Bay Area AQMD does not have an analogous rule for this source category. Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4309 continues to implement RACT levels of control. For the more recently amended rule, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

**Sacramento Metropolitan AQMD**

- Sacramento AQMD Rule 419 (NOx from Miscellaneous Combustion Units)

	SJVAPCD Rule 4309	SMAQMD Rule 419		
<b>Applicability</b>	Rule applies to dryer, dehydrator, or oven that is fired on gaseous fuel, liquid fuel, or is fired on gaseous and liquid fuel sequentially, and the total rated heat input for the unit is 5.0 MMBtu/hr or greater.	This rule applies to any miscellaneous combustion units and cooking units with a total rated heat input capacity of 2 million Btu per hour or greater located at a major stationary source of NOx and to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 5 million Btu per hour or greater that is not located at a major stationary source of NOx.		
<b>Exemptions</b>				
<b>Rule 4309 Exemption Categories:</b>	<b>Sections of the Rule</b>			
Column-type or tower dryers used to dry grains, or tree nuts.	Section 4.1.1	No such exemption stated in the rule.		
Units to pre-condition onions or garlic prior to dehydration	Section 4.1.2			
Charbroilers	Section 4.1.5			
Units used to dry lint cotton or cotton at cotton gins	Section 4.1.6			
Smokehouses or units used for roasting	Section 4.1.3			
Units to bake or fry food for human consumption	Section 4.1.4			
<b>Requirements</b>				
<b>Rule 4309 Equipment Categories:</b>				
	No process temperature	Process Temperature		
Gaseous Fuel-Fired Equipment			< 1200° F	≥ 1200° F
Dehydrators	-	Oven, Dehydrator, Dryer, Heater, Kiln, or Other Furnace	30 ppmvd @ 3% O2% (3.3 ppmvd @ 19% O2) or 0.036 lb/MMBtu	60 ppmvd (6.5 ppmvd @ 19% O2) or 0.073 lb/MMBtu
Asphalt/Concrete Plants	4.3 ppmvd @ 19% O2 (equates to 0.0492 lb/MMBtu)	Asphalt Manufacturing Operation	40 ppmvd @ 3% O2 (4.3 ppmvd @ 19% O2)	40 ppmvd @ 3% O2 (4.3 ppmvd @ 19% O2)
Milk, Cheese and Dairy Processing (<20 MMBtu/hr)	3.5 ppmvd @ 19% O2 (equates to 0.04 lb/MMBtu)		For units located at a major stationary source of NOx	For units located at a major stationary source of NOx
Milk, Cheese and Dairy Processing (≥20 MMBtu/hr)	5.3 ppmvd @ 19% O2 (equates to 0.061 lb/MMBtu)		30 ppmvd (equates to 3.3 ppmvd @ 19% O2)	60 ppmvd (equates to 6.5

	SJVAPCD Rule 4309	SMAQMD Rule 419		
			or 0.036 lb/MMBtu	ppmvd @ 19% O <sub>2</sub> or 0.073 lb/MMBtu
Other processes not described above	4.3 ppmvd @ 19% O <sub>2</sub> equates to 0.0492 lb/MMBtu	Incinerator or Crematory	60 ppmvd (6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu	
		Metal Heat Treating or Metal Melting Furnace	60 ppmvd (6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu	
		Other Furnace	30 ppmvd (3.3 ppmvd @ 19% O <sub>2</sub> ) or 0.036 lb/MMBtu	60 ppmvd (6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu
		Soybean Roaster	45 ppmvd (4.95 ppmvd @ 19% O <sub>2</sub> ) or 0.055 lb/MMBtu	60 ppmvd (6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu
		Other Units Not Listed Above	30 ppmvd (3.3 ppmvd @ 19% O <sub>2</sub> ) or 0.036 lb/MMBtu	60 ppmvd (6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu
		Cooking Unit	<500° F	≥ 500° F
40 ppmvd (4.3 ppmvd @ 19% O <sub>2</sub> ) or 0.053 lb/MMBtu	60 ppmvd (6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu			
Liquid Fuel-Fired Equipment				
All Liquid Fuel-Fired Units	Varies from 3.5 ppmvd @ 19% O <sub>2</sub> to 12 ppmvd @ 19% O <sub>2</sub>		For units located at a major stationary source of NO <sub>x</sub>  40 ppmvd (equates to 4.3 ppmvd @ 19% O <sub>2</sub> ) or 0.053 lb/MMBtu	For units located at a major stationary source of NO <sub>x</sub>  60 ppmvd (equates to 6.5 ppmvd @ 19% O <sub>2</sub> ) or 0.073 lb/MMBtu

SMAQMD Rule 419 establishes emission limits based on the process temperature and does not consider the equipment categories, whereas District Rule 4309 does not consider the process temperature and instead establishes emissions limits based on the equipment categories. Under SMAQMD’s Rule 419, the NO<sub>x</sub> limits vary from 3.3 to 6.5 ppmv at 19% O<sub>2</sub> with an average of 4.9 ppmv, while District Rule 4309 limits NO<sub>x</sub> emissions from 3.5 to 5.3 ppmv with most categories limited to 4.3 ppmv at 19% O<sub>2</sub>, independent of the process temperature. Overall, District Rule 4309 is at least as stringent, if not more stringent than SMAQMD Rule 419.

### Conclusion

District Rule 4309 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts’ rules.

## 4.6 RULE 4311 (FLARES)

### District Rule 4311 Description

District Rule 4311, amended on June 18, 2009, addresses any operation involving the use of a flare for VOC control. This source category currently includes flares associated with oil and gas production, methane and VOC gases extracted from landfills, municipal sewage treatment, wastewater treatment at food production facilities, petroleum refining, and VOC control of blowing agents at plastics product manufacturing. Flaring is a high temperature oxidation process used to burn combustible components, mostly hydrocarbons, of waste gases from industrial operations. 95 percent of the waste gases flared are natural gas, propane, pentane, ethylene, propylene, butadiene and butane. Rule 4311 contains operational requirements and flare minimization requirements for certain flares, and NO<sub>x</sub> and VOC emission limits for enclosed flares.

### How does District Rule 4311 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines or Alternative Control Techniques applicable to this source category.

#### A. Standards of Performance for New Stationary Sources (NSPS)

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPSs have not been updated since Rule 4311 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60.18 - General Control Device and Work Practice Requirements (2008/12)*
- *40 CFR 65.147 - Flares (2000/12)*
- *40 CFR 60 Subpart OOOOa - Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification, or Reconstruction Commenced After September 15, 2015 (2016/06)*
- *40 CFR 60 Subpart Ja - Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007 (2013/12)*

#### B. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)

NESHAPs and MACTs are requirements contained in 40 Code of Federal Regulations (CFR) Part 61 and 40 CFR Part 63. Since EPA has delegated the authority to implement NESHAP requirements to the District, NESHAPs and MACTs promulgated by EPA are usually incorporated by reference into District Rule 4002 (National Emission



Standards for Hazardous Air Pollutants). It is important to mention that the District implements NESHAPs and MACTs by incorporating the emission standards as conditions of the Permits to Operate issued to affected sources. The following NESHAP has not been updated since EPA’s approval of the 2014 RACT SIP, and therefore no further analysis is necessary at this time:

- *40 CFR 63 Subpart SS - National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process (2002/07)*

**State Regulations**

The following state regulation has not been amended since EPA’s approval of the 2014 RACT SIP, and therefore no further evaluation is necessary at this time:

- *CCR Title 17, Div. 3, Chapter 1, Subchapter 10, Article 4, Subarticle 13 - Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (2017/03)*

**How does District Rule 4311 compare to rules in other air districts?**

District staff compared emission limits, optional control requirements, and work practices in District Rule 4311 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 12, Rule 11 (Adopted June 4, 2003)
- Bay Area AQMD - Regulation 12, Rule 12 (Adopted July 20, 2005)
- Santa Barbara APCD - Rule 359 (Amended June 28, 1994)
- South Coast AQMD - Rule 1118 (Amended July 7, 2017)
- South Coast AQMD - Rule 1118.1 (Adopted January 4, 2019)

Sacramento Metropolitan AQMD and Ventura County APCD do not have an analogous rule for this source category. Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4311 continues to implement RACT levels of control. For the more recently amended rule, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

**South Coast AQMD**

- SCAQMD Rule 1118.1 (Control of Emissions from Non-Refinery Flares)

	SJVAPCD Rule 4311	SCAQMD Rule 1118.1
Applicability	All flares	Flares that require a SCAQMD permit used at non-refinery facilities, including, but not limited to: <ul style="list-style-type: none"> <li>• oil and gas production facilities</li> <li>• wastewater treatment facilities</li> <li>• landfills</li> <li>• organic liquid handling facilities</li> </ul>

	SJVAPCD Rule 4311	SCAQMD Rule 1118.1
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>• Municipal solid waste landfill flares subject to Rule 4642</li> <li>• Flares subject to 40 CFR 60 WWW or Cc</li> <li>• Stationary sources w/ potential to emit &lt;10 tons VOC and &lt;10 tons NOx per year (Not exempt from recordkeeping)</li> </ul>	<ul style="list-style-type: none"> <li>• Flares at asphalt plants; biodiesel plants; hydrogen production plants fueled in part with refinery gas; petroleum refineries; sulfuric acid plants; and sulfur recovery plants;</li> <li>• Flares routing only natural gas to the burner that are subject to SCAQMD Rule 1147;</li> <li>• Flares combusting only propane, butane, or a combination of propane and butane;</li> <li>• Flares at closed landfills collecting less than 2,000 MMscf of landfill gas per calendar year;</li> <li>• Flares with a various location permit;</li> <li>• Flares combusting regeneration gas;</li> <li>• Flares emitting less than 30 lb NOx/month;</li> <li>• Flares with an annual throughput limit equivalent to 200 hr/year;</li> <li>• Gas combusted during a utility pipeline curtailment is not used to calculate exceedance of use requirements</li> </ul>
<b>Requirements</b>	<p>For sources greater than 10 tpy NO<sub>x</sub> or VOC: Open flares (air-assisted, steam-assisted, or non-assisted): Comply with 40 CFR 60.18:</p> <p><u>Ground level enclosed flares without steam assist</u>: 0.0051 lb-VOC/MMBtu, 0.0952 lb-NO<sub>x</sub>/MMBtu (&lt;10 MMBtu/hr); 0.0027 lb-VOC/MMBtu, 0.1330 I-NO<sub>x</sub>/MMBtu (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu, 0.5240 lb-NO<sub>x</sub>/MMBtu (&gt; 100 MMBtu/hr).</p> <p><u>Ground level enclosed flares with steam assist</u>: 0.14 lb-VOC/MMBtu (as TOG), 0.068 lb-NO<sub>x</sub>/MMBtu (all ratings);</p> <p>Recordkeeping and reporting;                      Flare minimization plan for refinery flares or flares ≥ 5.0 MMBtu/hr at major sources of NO<sub>x</sub> or VOC.</p>	<p>Throughput limits for new or replacement flares of 110% of replaced flare or 45 MMscf/year</p> <p>New flare emission limits based on type of gas flared:</p> <ul style="list-style-type: none"> <li>• Produced gas: 0.018 lb NO<sub>x</sub>/MMBtu, 0.01 lb CO/MMBtu, 0.008 lb VOC/MMBtu</li> <li>• Landfill gas, and digester gas at a major facility: 0.025 lb NO<sub>x</sub>/MMBtu, 0.06 lb CO/MMBtu, 0.038 lb VOC/MMBtu</li> <li>• Digester gas at a minor facility, and other flare gas: 0.06 lb NO<sub>x</sub>/MMBtu</li> <li>• Organic liquid storage: 0.25 lb NO<sub>x</sub>/MMBtu, 0.37 lb CO/MMBtu</li> <li>• Organic liquid loading: 0.034 lb NO<sub>x</sub>/1,000 gallons loaded, 0.05 lb CO/1,000 gallons loaded</li> </ul> <p>Establishes requirements for existing flares not meeting the above emission limits based on exceeding a vocation based fractional use of total capacity in two consecutive calendar quarters. Fraction limits are: 5% for produced gas or any open flare; 70% for digester gas; and 20% for landfill gas. Units exceeding these limits must reduce flaring or replace with a new flare meeting emission limit requirements.</p>

Requirements for flare replacements under SCAQMD Rule 1118.1 could not be triggered until the beginning of 2021 based on calendar year 2020 data, and replacements would likely take well over 2 years, beyond 2023, to implement based on the Rule 1118.1 schedule and flexibilities with respect to applicability. The SCAQMD Rule 1118.1 limits for flares extend well beyond RACT, and have not been widely adopted in SIP rules. Additionally, the District’s recent evaluations of ultra low-NO<sub>x</sub> flaring technologies have found cost-effectiveness extending well beyond RACT levels ranging from approximately \$40,000 to millions of dollars per ton of NO<sub>x</sub> emissions reduced.

## Conclusion

District Rule 4311 varies in stringency when compared to other Agencies’ requirements. For the majority of the categories, Rule 4311 is as stringent as or more stringent than the other Agencies’ rules, and provides, at minimum, a RACT level of control for this source category.

## 4.7 RULE 4352 (SOLID FUEL FIRED BOILERS, STEAM GENERATORS, AND PROCESS HEATERS)

### District Rule 4352 Description

Rule 4352 applies to solid fuel fired boilers, steam generators, and process heaters. Units subject to Rule 4352 are not subject to Rules 4351, 4305, 4306, 4307, and 4308 because these rules apply to boilers, steam generators, and process heaters fired on gaseous or liquid fuel.

District Rule 4352, last amended on 12/15/2011, requires units to meet the following NO<sub>x</sub> limits, based on a 24-hour block average.

Rule 4352 NO <sub>x</sub> Limits	
Fuel Type	NO <sub>x</sub> Limit
Municipal Solid Waste	165 ppmv corrected to 12% CO <sub>2</sub>
Biomass	90 ppmv corrected to 3% O <sub>2</sub>
Other	65 ppmv corrected to 3% O <sub>2</sub>

### How does District Rule 4352 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines applicable to this source category.

#### A. EPA - Alternative Control Techniques (ACT)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACTs have not been updated since Rule 4352 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Industrial, Commercial, and Institutional Boilers (EPA-453/R-94-022 1994/03)*
- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Utility Boilers (EPA-453/R-94-023 1994/03)*

#### B. New Source Performance Standards (NSPS)

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPSs have not been updated since Rule 4352 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this

approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60 Subpart Cb - Emission Guidelines and Compliance Times for Large Municipal Waste Combustors that are Constructed On or Before September 20, 1994 (1995/12)*
- *40 CFR 60 Subpart D - Standards of Performance for Fossil-Fuel-Fired Steam Generators (2007/06)*
- *40 CFR 60 Subpart Da - Standards of Performance for Electric Utility Steam Generating Units (2013/04)*
- *40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (2007/06)*
- *40 CFR 60 Subpart Dc - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (2014/02)*
- *40 CFR 60 Subpart Ea - Standards of Performance for Municipal Waste Combustors for which Construction is Commenced after December 20, 1989 and on or before September 20, 1994 (1995/12)*
- *40 CFR 60 Subpart Eb - Standards of Performance for Municipal Waste Combustors for which Construction is Commenced after September 20, 1994 or for which Modification or Reconstruction is Commenced after June 19, 1996 (2007/03)*
- *40 CFR 60 Subpart AAAA - Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced after August 30, 1999 or for Which Modification is Commenced After June 6, 2001 (2003/01)*
- *40 CFR 60 Subpart BBBB - Standards of Performance for Small Municipal Waste Combustion Units Constructed on or before August 30, 1999 (2003/01)*

**C. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)**

NESHAPs and MACTs are requirements contained in 40 Code of Federal Regulations (CFR) Part 61 and 40 CFR Part 63. Since EPA has delegated the authority to implement NESHAP requirements to the District, NESHAPs and MACTs promulgated by EPA are usually incorporated by reference into District Rule 4002 (National Emission Standards for Hazardous Air Pollutants). It is important to mention that the District implements NESHAPs and MACTs by incorporating the emission standards as conditions of the Permits to Operate issued to affected sources. The following NESHAP has not been updated since EPA's approval of the 2014 RACT SIP, and therefore no further evaluation is necessary at this time:

- *40 CFR 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (2013/01)*

## State Regulations

There are no state regulations applicable to this source category.

### How does District Rule 4352 compare to rules in other air districts?

District staff compared emission limits, optional control requirements, and work practices in District Rule 4352 to comparable requirements in rules from the following:

- Bay Area AQMD - Regulation 9, Rule 7 (Amended May 4, 2011)
- Bay Area AQMD - Regulation 9, Rule 11 (Adopted May 17, 2000)
- Sacramento Metropolitan AQMD - Rule 411 (Amended August 23, 2007)
- Yolo-Solano AQMD - Rule 2-43 (Amended November 10, 2010)
- El Dorado County AQMD- Rule 232 (Amended September 25, 2001)
- Placer County APCD - Rule 233 (Amended June 14, 2012)
- South Coast AQMD - Rule 1146 (Amended December 7, 2018)

Ventura County APCD does not have an analogous rule for this source category. Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4352 continues to implement RACT levels of control. For the more recently amended rule, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

### South Coast AQMD

- South Coast AQMD Rule 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)

	SJVAPCD Rule 4352	SCAQMD Rule 1146
<b>Applicability</b>	NOx emission limit is applicable to any boiler, steam generator or process heater fired on solid fuel	Boilers, steam generators, and process heaters ≥ 5 MMBtu/hr rated heat input capacity used in all industrial, institutional, and commercial operations and fired on fossil-fuels
<b>Exemption</b>	NOx emission limits do not apply to units operated at a Stationary Source that has a potential to emit < 10 tpy of NOx	Units rated heat ≤ 5 MMBtu/hr.
<b>Requirements Emission Limits</b>	<u>Municipal Solid Waste</u> ≤ 165 ppmv NOx corrected to 12% CO <sub>2</sub>  <u>Biomass</u> ≤ 90 ppmv NOx corrected to 3% O <sub>2</sub>  <u>All others</u> ≤ 65 ppmv NOx corrected to 3% O <sub>2</sub>	No applicable requirements for electric utility boilers

District staff evaluated the requirements contained within SCAQMD Rule 1146, including the 40 ppmv @ 3% O<sub>2</sub> limit for non-gaseous fuels. All solid-fuel fired (non-gaseous) boilers operating within the Valley are used by electric utilities to generate electricity, a category which SCAQMD specifically exempts from the requirements of

Rule 1146. Therefore, the 40 ppmv requirement in SCAQMD Rule 1146 would not apply to the solid-fuel fired boilers operating in the Valley.

There are two municipal solid waste-fired power plants located in the South Coast Air Basin; however, SCAQMD Rule 1146 is only applicable to fossil-fuel fired boilers, and municipal solid waste is not considered a fossil-fuel by definition.

South Coast AQMD enforces requirements for electricity generating facilities through SCAQMD Rule 1135 (Emissions of Oxides of Nitrogen from Electricity Generating Facilities), which applies to facilities of 50 MW or greater. However, the one solid-fuel fired biomass facility located in the South Coast Air Basin has a capacity of 47 MWs,<sup>3</sup> and is therefore exempt from the requirements of SCAQMD Rule 1135. Similarly, based on a review of District permits, all solid-fuel fired biomass facilities in the Valley are under 50 MW in size. Therefore, the requirements of SCAQMD Rule 1135 would not apply to facilities in the Valley.

Based on District staff review, no sources in SCAQMD are currently complying with the SCAQMD Rule 1146 limit of 40 ppmv for non-gaseous limits, and this limit would not apply to the operating solid-fuel fired boilers located in the Valley.<sup>4</sup> Additionally, EPA's 2018 RACT approval found that the District's rule currently meets RACT, and the cost-effectiveness of additional potential control options would far exceed RACT.

## **Conclusion**

District Rule 4352 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

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<sup>3</sup> Greenleaf Desert View Power, Riverside County (<http://www.calbiomass.org/facilities-map/>)

<sup>4</sup> Approval and Disapproval of California Air Plan; San Joaquin Valley Serious Air Plan and Attainment Date Extension for the 1997 PM2.5 NAAQS. Final Rule. 81 Fed. Reg. 26, pp. 6936-6986. (2016, February 9) (to be codified at 40 CFR Parts 52 and 81) <https://www.gpo.gov/fdsys/pkg/FR-2016-02-09/pdf/2016-02325.pdf> and <http://www.calbiomass.org/facilities-map/>



## 4.8 RULE 4354 (GLASS MELTING FURNACES)

### District Rule 4354 Description

The provisions of Rule 4354 are applicable to glass melting furnaces in the Valley. The purpose of this rule is to limit NO<sub>x</sub>, SO<sub>x</sub>, VOC, CO, and particulate matter (PM<sub>10</sub>) emissions from glass melting furnaces. Rule 4354 was adopted on September 14, 1994, and has been subsequently amended six times. EPA finalized approval of the most recent amendments to Rule 4354 on January 31, 2013, and deemed this rule as being as stringent as or more stringent than established RACT requirements. As a result of this stringent prohibitory rule and continuing efforts on behalf of this industry to reduce emissions, the Valley is home to six glass-making facilities with glass melting furnaces that utilize the most advanced low-NO<sub>x</sub> firing technology. The NO<sub>x</sub> emission limits contained within Rule 4354 require the installation of the best available NO<sub>x</sub> technology (i.e. oxy-fuel firing or SCR systems).

### How does District Rule 4354 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines requirements for this source category.

#### A. Alternative Control Techniques (ACT)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACTs have not been updated since Rule 4354 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *NO<sub>x</sub> Emissions from Glass Manufacturing (EPA-453/R-94-37 1994/06)*

#### B. New Source Performance Standards (NSPS)

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPS has not been updated since Rule 4354 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60 Subpart CC - Standards of Performance for Glass Manufacturing Plants*
- *40 CFR 60 Subpart PPP - Standards of Performance for Wool Fiberglass Manufacturing Plants (Amended October 17, 2000)*

### C. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)

NESHAPs and MACTs are requirements contained in 40 Code of Federal Regulations (CFR) Part 61 and 40 CFR Part 63. Since EPA has delegated the authority to implement NESHAP requirements to the District, NESHAPs and MACTs promulgated by EPA are usually incorporated by reference into District Rule 4002 (National Emission Standards for Hazardous Air Pollutants). It is important to mention that the District implements NESHAPs and MACTs by incorporating the emission standards as conditions of the Permits to Operate issued to affected sources.

The following NESHAPs have not been updated since Rule 4354 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 61 Subpart N - National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants (1986/08)*
- *40 CFR 63 Subpart NN - National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing at Area Sources (2015/07)*
- *40 CFR 63 Subpart NNN - National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing (2017/12)*
- *40 CFR 63 Subpart SSSSSS - National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources (2007/12)*

For the following, more recently amended NESHAP, District staff is providing an evaluation to demonstrate that RACT continues to be met.

- *40 CFR 63 Subpart HHHH - National Emission Standards for Hazardous Air Pollutants for Wet-Formed Fiberglass Mat Production (2019/02)*

This NESHAP only contains emission limits and regulations to reduce formaldehyde emissions from each drying or curing oven used as a part of a wet-formed fiberglass mat production facility. Since this subpart does not contain any requirements specifically for glass melting furnaces, it does not regulate NO<sub>x</sub> or VOC emissions for this source category. Therefore, the requirements of this subpart cannot define RACT for this source category and no further evaluation is necessary.

### State Regulations

There are no state regulations applicable to this source category.

### How does District Rule 4354 compare to rules in other air districts?

District staff compared emission limits, optional control requirements, and work practices in District Rule 4354 to comparable requirements in rules from the following California nonattainment areas:

- Bay Area AQMD - Regulation 9, Rule 12 (Adopted January 19, 1994)
- South Coast AQMD - Rule 1117 (Amended January 6, 1984)

Sacramento Metropolitan AQMD and Ventura County APCD do not have an analogous rule for this source category. The following analyses compare District requirements with the requirements of the remaining above-listed rules:

**Bay Area AQMD**

- BAAQMD Regulation 9, Rule 12 (Nitrogen Oxides from Glass Melting Furnaces)

	SJVAPCD Rule 4354		BAAQMD Reg 9, Rule 12
<b>Applicability</b>	The provisions of this rule shall apply to any glass melting furnace for the production of, container glass, fiberglass, and flat glass		This rule limits the emission of nitrogen oxides (NO <sub>x</sub> ) from glass melting furnaces
<b>Exemption</b>	<ul style="list-style-type: none"> <li>• Furnaces which heat is provided by electric current from electrodes.</li> <li>• Any glass melting furnace that is part of a stationary source with a total potential to emit for all processes, less than 10.0 tons/yr of NO<sub>x</sub> and less than 10.0 tons/yr of VOC.</li> </ul>		<ul style="list-style-type: none"> <li>• Furnaces which heat is provided by electric current from electrodes.</li> <li>• Furnaces with a production capacity of 4550 kg (5 short tons) of glass per day or less.</li> </ul>
<b>Requirements</b>	<b>Container Glass:</b>		
	NO <sub>x</sub>	1.5 lb/ton <sup>B</sup>	5.5 lb/ton, averaged over any consecutive 3-hour period
	VOC (100% air-fired)	20 ppmv @ 8% O <sub>2</sub> (based on 3 hr avg)	No VOC Limits Specified
	VOC (oxy-fuel/oxygen assisted)	0.25 lb/ton (based on 3 hr avg)	
	<b>Fiberglass:</b>		
	NO <sub>x</sub>	1.3 lb/ton <sup>A, C</sup>	5.5 lb/ton, averaged over any consecutive 3-hour period
		3.0 lb/ton <sup>A, D</sup>	
	VOC	No Limit Specified	No Limit Specified
	<b>Flat Glass:</b>		
	NO <sub>x</sub> Standard Option	3.7 lb/ton <sup>A</sup>	5.5 lb/ton, averaged over any consecutive 3-hour period
		3.2 lb/ton <sup>B</sup>	
	NO <sub>x</sub> Enhanced Option	3.4 lb/ton <sup>A</sup>	
		2.9 lb/ton <sup>B</sup>	
VOC (100% air-fired)	20 ppmv @ 8% O <sub>2</sub> (based on 3 hr avg)	No VOC Limits Specified	
VOC (oxy-fuel/oxygen assisted)	0.10 lb/ton (based on 3 hr avg)		

<sup>A</sup> Block 24-hour average

<sup>B</sup> Rolling 30-day average

<sup>C</sup> Not subject to California Public Resources Code Section 19511

<sup>D</sup> Subject to California Public Resources Code Section 19511

The District evaluated the control requirements in BAAQMD Regulation 9 Rule 12, and found no requirements that were more stringent than those already in Rule 4354.

**South Coast AQMD**

- SCAQMD Rule 1117, Emissions of Oxides of Nitrogen from Glass Melting Furnaces

	SJVAPCD Rule 4354		SCAQMD Rule 1117
<b>Applicability</b>	The provisions of this rule shall apply to any glass melting furnace for the production of, container glass, fiberglass, and flat glass		This rule limits the emission of nitrogen oxides (NOx) from glass melting furnaces.
<b>Exemption</b>	<ul style="list-style-type: none"> <li>• Furnaces which heat is provided by electric current from electrodes.</li> <li>• Any glass melting furnace that is part of a stationary source with a total potential to emit for all processes, less than 10.0 tons/yr of NO<sub>x</sub> and less than 10.0 tons/yr of VOC.</li> </ul>		<ul style="list-style-type: none"> <li>• Furnaces which are limited by Permit to operate to 15 lbs/hour of NO<sub>x</sub> or less.</li> <li>• Glass remelt facilities using exclusively glass cullet, marbles, chips, or similar feedstock in lieu of basic glass-making raw materials.</li> <li>• Furnaces used in the melting of glass for the production of glass tableware exclusively.</li> <li>• Flat glass melting furnaces.</li> <li>• Furnaces used in the melting of glass for the production of fiberglass exclusively.</li> <li>• Idling furnaces.</li> </ul>
<b>Requirements</b>	<b>Container Glass:</b>		
	NO <sub>x</sub>	1.5 lb/ton <sup>B</sup>	4.0 lb/ton <sup>A</sup>
	VOC (100% air-fired)	20 ppmv @ 8% O <sub>2</sub> (based on 3 hr avg)	No VOC Limits Specified
	VOC (oxy-fuel/oxygen assisted)	0.25 lb/ton (based on 3 hr avg)	
	<b>Fiberglass:</b>		
	NO <sub>x</sub>	1.3 lb/ton <sup>A, C</sup>	No Limit Specified, Exempt from Rule
		3.0 lb/ton <sup>A, D</sup>	
	VOC	No Limit Specified	No Limit Specified, Exempt from Rule
	<b>Flat Glass:</b>		
	NO <sub>x</sub> Standard Option	3.7 lb/ton <sup>A</sup>	No Limits Specified, Exempt from Rule
		3.2 lb/ton <sup>B</sup>	
	NO <sub>x</sub> Enhanced Option	3.4 lb/ton <sup>A</sup>	
		2.9 lb/ton <sup>B</sup>	
	VOC (100% air-fired)	20 ppmv @ 8% O <sub>2</sub> (based on 3 hr avg)	No Limits Specified, Exempt from Rule
VOC (oxy-fuel/oxygen assisted)	0.10 lb/ton (based on 3 hr avg)		

<sup>A</sup> Block 24-hour average

<sup>B</sup> Rolling 30-day average

<sup>C</sup> Not subject to California Public Resources Code Section 19511

<sup>D</sup> Subject to California Public Resources Code Section 19511

The District evaluated the control requirements in SCAQMD Rule 1117, and found no requirements that were more stringent than those already in Rule 4354. District staff

note that SCAQMD is currently developing potential amendments to Rule 1117 that may lower the NO<sub>x</sub> emission limits contained in the rule. The current requirements established in District Rule 4354 and SCAQMD Rule 1117 have been previously approved by EPA as implementing, at minimum, a RACT level of stringency. Potential new requirements that may result from the SCAQMD rule development process would go beyond RACT levels of control.

## **Conclusion**

District Rule 4354 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

## 4.9 RULE 4623 (STORAGE OF ORGANIC LIQUIDS)

### District Rule 4623 Description

The purpose of this rule is to limit volatile organic compound (VOC) emissions from the storage of organic liquids to any tank with a capacity of 1,100 gallons or greater.

This rule requires storage of organic liquids in tanks to be equipped with one of the following VOC control systems: (A) pressure-vacuum relief valves; (B) internal floating roof; (C) external floating roof; (D) a fixed roof tank with vapor recovery system of at least 95% control efficiency, or (E) pressure vessel. Specific control requirements vary depending on the tank capacity and TVP of the stored liquid.

### How does District Rule 4623 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Alternative Control Techniques applicable to this source category.

#### A. Control Technique Guidelines (CTG)

District staff conducted a comprehensive evaluation of EPA CTG requirements. The following CTGs have not been updated since Rule 4623 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed-Roof Tanks (EPA-450/2-77-036 1977/12)*
- *Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks (EPA-450/2-78-047 1978/12)*

#### B. Standards of Performance for New Stationary Sources (NSPS)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACTs have not been updated since Rule 4623 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60 Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced after June 11, 1973, and Prior to May 19, 1978 (2012/09)*
- *40 CFR 60 Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced after May 18, 1978, and Prior to July 23, 1984 (2000/12)*



- *40 CFR 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquids Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984 (2000/12)*

**C. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)**

NESHAPs and MACTs are requirements contained in 40 Code of Federal Regulations (CFR) Part 61 and 40 CFR Part 63. Since EPA has delegated the authority to implement NESHAP requirements to the District, NESHAPs and MACTs promulgated by EPA are usually incorporated by reference into District Rule 4002 (National Emission Standards for Hazardous Air Pollutants). It is important to mention that the District implements NESHAPs and MACTs by incorporating the emission standards as conditions of the Permits to Operate issued to affected sources. The following NESHAP has not been updated since EPA's approval of the 2014 RACT SIP:

- *40 CFR 63 Subpart BBBB - Gasoline Distribution Facilities (Bulk Gasoline Terminal and Pipeline Breakout Station) (2011/01)*

For the following, more recently amended NESHAP, District staff is providing an evaluation to demonstrate that RACT continues to be met.

- *40 CFR 63 Subpart EEEE - Organic Liquids Distribution (Non-Gasoline) (2020/03)*

This NESHAP applies to various equipment and components used in organic liquids distribution, including organic liquids storage tanks.

The NESHAP requires emissions from storage tank with capacity greater than 5,000 gallons be routed through a closed vent system into any combination of control devices achieving at least 95 weight-percent HAP reduction, or a reduction to an exhaust concentration less than or equal to 20 ppmv (control devices must meet applicable testing, monitoring and operating standards depending on type of device).

Emission Control Requirements

District Rule 4623 requires the storage vessel with capacity of 1,100 gallons or greater be equipped with a VOC control system, including a VOC control device with a minimum control efficiency of 95%, whereas this NESHAP requires the storage vessel with capacity greater than 5,000 gallons be equipped with a VOC control system that achieving a minimum control efficiency of 95%.

Based on the discussion above and taking all the comparison categories into consideration; District Rule 4623 is more stringent than this CTG because it applies to storage vessels with capacity of 1,100 gallons or greater, compared to the CTG's applicability to storage vessel with capacity greater than 5,000 gallons.

## **State Regulations**

There are no State Regulations applicable to this source category.

### **How does District Rule 4623 compare to rules in other air districts?**

District staff compared emission limits, optional control requirements, and work practices in District Rule 4623 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 8, Rule 5 (Amended October 18, 2006)
- Sacramento Metropolitan AQMD - Rule 446 (Amended November 16, 1993)
- Ventura County APCD - Rule 71.2 (Amended September 26, 1989)
- South Coast AQMD - Rule 463 (Amended November 4, 2011)

Based on a review of rule requirements implemented by other air districts for this source category, District staff found that Rule 4623 continues to implement RACT levels of control.

## **Conclusion**

District Rule 4623 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

## 4.10 RULE 4624 (TRANSFER OF ORGANIC LIQUID)

### District Rule 4624 Rule Description

The purpose of this rule is to limit VOC emissions from the transfer of organic liquids, which are liquids that contain VOCs and have a True Vapor Pressure (TVP) of 1.5 psia or greater at the storage container's maximum organic liquid storage temperature.

Facilities transferring 20,000 gallons or more per day of organic liquid must comply with a VOC emission limit of 0.08 lb per 1,000 gallons, use bottom loading, and route VOC vapors to a vapor collection and control system, a fixed roof container, a floating roof container, a pressure vessel, or other closed VOC emission control system. Facilities transferring less than 20,000 gallons per day of organic liquid must capture at least 95% of VOC vapors displaced during loading, use bottom loading, and route VOC vapors to a vapor collection and control system, a fixed roof container, a floating roof container, a pressure vessel, or other closed VOC emission control system.

Pressure in the delivery tank being loaded must be maintained within the range of 18 inches water column pressure and six (6) inches water column vacuum. Delivery tanks which previously contained organic liquids shall be filled only at transfer facilities that are compliant with the vapor capture requirements. Transfer racks and vapor collection equipment shall have no leaks and no excess organic liquid drainage at disconnections. New top loading facilities or the expansions of any existing one are prohibited.

### How does District Rule 4624 compare with federal and state rules and regulations?

#### Federal Regulations

There are no Alternative Control Techniques for this source category.

#### A. Control Technique Guidelines (CTG)

District staff conducted a comprehensive evaluation of EPA CTG requirements. The following CTG has not been updated since Rule 4624 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals (EPA-450/2-77-026 1977/10)*

#### B. Standards of Performance for New Stationary Sources (NSPS)

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPSs have not been updated since Rule 4624 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this

approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60 Subpart XX - Standards of Performance for Bulk Gasoline Terminals (2003/12)*

**C. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)**

NESHAPs and MACTs are requirements contained in 40 Code of Federal Regulations (CFR) Part 61 and 40 CFR Part 63. Since EPA has delegated the authority to implement NESHAP requirements to the District, NESHAPs and MACTs promulgated by EPA are usually incorporated by reference into District Rule 4002 (National Emission Standards for Hazardous Air Pollutants). It is important to mention that the District implements NESHAPs and MACTs by incorporating the emission standards as conditions of the Permits to Operate issued to affected sources.

The following NESHAP has not been updated since EPA's approval of the 2014 RACT SIP:

- *40 CFR 63 Subpart BBBB - Gasoline Distribution Facilities (Bulk Gasoline Terminal and Pipeline Breakout Station (2011/01))*

For the following, more recently amended NESHAP, District staff is providing an evaluation to demonstrate that RACT continues to be met.

- *40 CFR 63 Subpart EEEE - Organic Liquids Distribution (Non-Gasoline) (2020/03)*

This NESHAP applies to various equipment and components used in organic liquids distribution, including loading racks.

The NESHAP requires that vapors displaced during loading (1) be routed through a closed vent system into any combination of control devices achieving at least 98 weight-percent HAP reduction, or a reduction to an exhaust concentration less than or equal to 20 ppmv (control devices must meet applicable testing, monitoring and operating standards depending on type of device); (2) be routed into fuel gas systems or back into a process; or (3) captured in a vapor balancing system that routes organic HAP vapors to the storage tank from which the liquid being loaded originated or to another storage tank connected to a common header.

The requirements of District Rule 4624 and 40 CFR 63 Subpart EEEE are similar as far as the collection and disposal of vapors displaced during organic liquid loading is concerned. However, it is not possible to compare destruction efficiencies of the control equipment directly because District Rule 4624 addresses primarily VOC (requiring a destruction efficiency of 95%), while 40 CFR 63 Subpart EEEE addresses HAPs

(requiring a destruction efficiency of 98%). Additionally, the District implements 40 CFR 63 Subpart EEEE by reference under District Rule 4002.

## **State Regulations**

District staff conducted a comprehensive evaluation of California regulatory requirements. The following state regulations have not been updated since Rule 4624 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *California Air Resources Board (CARB) Executive Order G-70-124M for Vapor Recovery Systems Installed on Gasoline Bulk Plants (1999/10)*
- *California Air Resources Board (CARB) Executive Order G-70-126M for Vapor Recovery Systems Installed on Gasoline Bulk Terminals (1996/12)*

## **How does District Rule 4624 compare to rules in other air districts?**

District staff compared emission limits, optional control requirements, and work practices in District Rule 4624 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 8, Rule 6 (Amended February 2, 1994)
- Bay Area AQMD - Regulation 8, Rule 33 (Amended April 15, 2009)
- Bay Area AQMD - Regulation 8, Rule 39 (Amended April 15, 2009)
- Sacramento Metropolitan AQMD - Rule 447 (Amended April 2, 1998)
- Ventura County APCD - Rule 70 (Amended April 1, 2009)
- Ventura County APCD - Rule 71.3 (Amended June 16, 1992)
- South Coast AQMD - Rule 462 (Amended May 14, 1999)
- South Coast AQMD - Rule 1142 (Amended July 19, 1991)

Based on a review of rule requirements implemented by other air districts for this source category, District staff found that Rule 4624 continues to implement RACT levels of control.

## **Conclusion**

District Rule 4624 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.

## 4.11 RULE 4702 (INTERNAL COMBUSTION ENGINES)

### District Rule 4702 Description

Rule 4702 applies to any internal combustion (IC) engine rated at 25 brake horsepower (bhp) or greater. The purpose of this rule is to limit NO<sub>x</sub>, CO, VOC, and SO<sub>x</sub> emissions from units subject to this rule. Rule 4702 has significantly reduced emissions from non-agricultural and agricultural IC engines, with substantial investments being made by the affected sources to comply with the rule. The August 2011 amendments to Rule 4702 strengthened the rule by implementing more stringent NO<sub>x</sub> emission limits as low as 11 ppmv for certain spark-ignited engines used in non-agricultural operations.

### How does District Rule 4702 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Technique Guidelines requirements for this source category.

#### A. Alternative Control Techniques (ACT)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACTs have not been updated since Rule 4702 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document - NO<sub>x</sub> Emissions from Stationary Reciprocating Internal Combustion Engines (EPA-453/R-93-032 1993/07, updated 2000/09)*

#### B. Standards of Performance for New Stationary Sources (NSPS)

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPS has not been updated since Rule 4702 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (2013/01)*

For the following, more recently amended, NESHAP, District staff is providing an evaluation to demonstrate that RACT continues to be met.



- *40 CFR 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (2019/11)*

The New Source Performance Standards (NSPS) of 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines apply to stationary compression-ignition IC engines. 40 CFR 60 Subpart IIII establishes emission certification requirements for manufacturers of stationary compression-ignition IC engines. 40 CFR 60 Subpart IIII also establishes emission requirements for owners and operators of compression-ignition IC engines for which construction commenced after July 11, 2005 and the engine was manufactured after April 1, 2006 for engines that are not fire pump engines and for owners and operators of compression-ignition IC engines for which construction commenced after July 11, 2005 and the engine was manufactured after July 1, 2006 for engines that were manufactured as certified National Fire Protection Association (NFPA) fire pump engines after July 1, 2006.

In 2014, the District evaluated the requirements of 40 CFR 60 Subpart IIII for the District's Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP) (June 19, 2014) and determined that Rule 4702 was at least as stringent as 40 CFR 60 Subpart IIII. Since that time 40 CFR 60 Subpart IIII has been amended twice – once on July 7, 2016 and once on October 13, 2019.

The July 7, 2016 amendments to 40 CFR 60 Subpart IIII allowed manufacturers to design stationary compression-ignition IC engines so that operators can temporarily override inducements that require operation of add-on emission control systems (i.e. selective catalytic reduction (SCR)) during qualified emergency situations where the operation of the engine or equipment is needed to protect human life and to require that the engines comply with Tier 1 emission standards during such emergencies when the add-on controls are not operating. In addition, the July 7, 2016 amendments extended the provisions that allow less stringent requirements for areas of Alaska that are not accessible by the Federal Aid Highway System (FAHS) to other remote areas of Alaska with limited accessibility, consistent with the definition of remote areas in 40 CFR 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE).

The November 13, 2019, amendments to 40 CFR 60 Subpart IIII removed the requirement that model year 2014 and later stationary compression-ignition IC engines located in remote areas of Alaska must comply with the Tier 4 PM emission standards and instead required that these engines comply with Tier 3 PM emission standards. These amendments did not increase the stringency of any requirements in 40 CFR 60 Subpart IIII and parts of the amendments were only applicable to IC engines located in remote regions of Alaska.

Therefore, the determination that Rule 4702 is at least as stringent as 40 CFR 60 Subpart IIII remains valid.

### C. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)

NESHAPs and MACTs are requirements contained in 40 Code of Federal Regulations (CFR) Part 61 and 40 CFR Part 63. Since EPA has delegated the authority to implement NESHAP requirements to the District, NESHAPs and MACTs promulgated by EPA are usually incorporated by reference into District Rule 4002 (National Emission Standards for Hazardous Air Pollutants). It is important to mention that the District implements NESHAPs and MACTs by incorporating the emission standards as conditions of the Permits to Operate issued to affected sources.

The following NESHAP has not been updated since Rule 4702 was approved as meeting RACT requirements through EPA's approval of the 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 63 Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (2013/01)*

#### State Regulations

District staff conducted a comprehensive evaluation of California regulatory requirements. The following state regulations have not been updated since Rule 4702 was approved as meeting RACT requirements through EPA's approval of the District's 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *California Environmental Protection Agency Air Resources Board Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Stationary Spark-Ignited Internal Combustion Engines (2001/11)*
- *Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines (2004/02)*
- *Title 17 California Code of Regulations (CCR), Section 93116 - Airborne Toxic Control Measure (ATCM) for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater (2004/02)*

#### How does District Rule 4702 compare to rules in other air districts?

District staff compared emission limits, optional control requirements, and work practices in District Rule 4702 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 9, Rule 8 (Amended July 25, 2007)
- Sacramento Metropolitan AQMD - Rule 412 (Adopted June 1, 1995)
- Ventura County APCD - Rule 74.9 (Amended November 8, 2005)

- Ventura County APCD - Rule 74.16 (Adopted January 8, 1991)
- South Coast AQMD - Rule 1110.2 (Amended November 1, 2019)

Based on a review of rule requirements implemented prior to EPA’s approval of the District’s 2014 RACT SIP, District staff found that Rule 4702 continues to implement RACT levels of control. For more recently amended rules, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

**South Coast AQMD**

- SCAQMD Rule 1110.2 (Emissions from Gaseous- And Liquid-Fueled Engines)

	SJVAPCD Rule 4702	SCAQMD Rule 1110.2
<b>Applicability</b>	Internal combustion engine rated at ≥ 25 bhp	Stationary and portable IC engines rated more than 50 bhp
<b>Exemption</b>	<p>Limited to operate less than 100 hrs/yr</p> <p>De-rated engine that has been physically limited and restricted by permit to an operational level of &lt; 50 hp not used in agricultural operation (prior to 6/1/04)</p> <p>De-rated engine that has been physically limited and restricted by permit to an operational level of &lt; 50 bhp used in agricultural operation (prior to 6/1/05)</p>	<ul style="list-style-type: none"> <li>• IC engines powering orchard wind machines;</li> <li>• Emergency IC engines permitted to operate no more than 200 hours per year;</li> <li>• Laboratory IC engines used in research and testing purposes;</li> <li>• IC Engines operated for purposes of performance verification and testing of engines;</li> <li>• Auxiliary IC engines used to power other engines or gas turbines during start-ups;</li> <li>• Portable engines that are registered under the state Portable Equipment Registration Program (PERP)</li> <li>• IC engines operating on San Clemente Island;</li> <li>• Tier 4 certified stationary agricultural IC engines for which the electric utility rejected an application for an electrical line extension to the engine location or that do not qualify for Carl Moyer Program funding;</li> <li>• IC engine start-up periods, until sufficient operating temperatures are reached for proper operation of emission control equipment or for the tuning of the engines and/or emission control equipment, and engine shutdown periods. The periods shall not exceed 30 minutes, unless a longer period, not exceeding two hours, is approved in writing;</li> <li>• IC engine start-ups, after an engine overhaul or major repair, or the replacement of catalytic emission control equipment, for a period not to exceed four operating hours;</li> <li>• Initial commissioning of a new IC engine for a period not exceeding 150 operating hours;</li> <li>• IC engines rated 100 bhp or less used exclusively for electrical generation at remote two-way radio transmission towers where no utility, electricity, or natural gas is available within a ½ mile radius, and is fired exclusively on diesel #2, compressed natural gas, or liquefied petroleum gas;</li> <li>• NOx emissions from existing IC engines subject to SCAQMD RECLAIM Program (pursuant to SCAQMD Rule 2001 – RECLAIM Applicability);</li> <li>• IC engines operated in either the Southern California Coastal Waters or Outer Continental Shelf Waters that power cranes and are certified to meet the Tier 4 Final emission standards</li> </ul>

SJVAPCD Rule 4702		SCAQMD Rule 1110.2
		<ul style="list-style-type: none"> <li>The facility operator of MM PRIMA DESHECHA ENERGY, LLC provided that a plan was submitted before July 1, 2016 for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022; and</li> <li>IC engines located at landfills or publicly owned treatment works that are subject to a NOx emission limit in a Regulation XI rule adopted or amended after November 1, 2019</li> </ul>
<b>Non-Agricultural Rich-Burn Waste Gas-Fueled IC Engines</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	50 ppmv	11 ppmv
VOC	250 ppmv	30 ppmv
<b>Non-Agricultural Rich-Burn Cyclic Loaded, Field Gas Fueled IC Engines</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	50 ppmv	No Such Category
VOC	250 ppmv	
<b>Non-Agricultural Rich-Burn Limited Use IC Engines</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	25 ppmv	No Such Category
VOC	250 ppmv	
<b>Non-Agricultural Rich-Burn IC Engines Not Listed Above</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	11 ppmv	11 ppmv
VOC	250 ppmv	30 ppmv
<b>Non-Agricultural Lean-Burn, Two-Stroke, Gaseous Fueled, &gt;50 bhp and &lt; 100 bhp IC Engines</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	75 ppmv	No Such Category
VOC	750 ppmv	
<b>Non-Agricultural Lean-Burn Limited Use IC Engines</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	65 ppmv	No Such Category
VOC	750 ppmv	
<b>Non-Agricultural Lean-Burn IC Engines Used for Gas Compression</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	65 ppmv or 93% reduction	No Such Category
VOC	750 ppmv	
<b>Non-Agricultural Lean-Burn Waste Gas-Fueled IC Engines</b> (ppmv @ 15% oxygen on a dry basis)		
NOx	65 ppmv or 90% reduction	11 ppmv
VOC	750 ppmv	30 ppmv

	SJVAPCD Rule 4702	SCAQMD Rule 1110.2
<b>Agricultural Operation Spark-Ignited Rich-Burn IC Engines<sup>5</sup></b> (ppmv @ 15% oxygen on a dry basis)		
NOx	90 ppmv or 80% reduction	11 ppmv
VOC	250 ppmv	30 ppmv
<b>Agricultural Operation Spark-Ignited Lean-Burn IC Engines<sup>6</sup></b> (ppmv @ 15% oxygen on a dry basis)		
NOx	150 ppmv or 80% reduction	11 ppmv
VOC	750 ppmv	30 ppmv
<b>Agricultural Operation Compression-Ignited IC Engines<sup>7</sup></b> (ppmv @ 15% oxygen on a dry basis)		
NOx	Tier 3 or Tier 4 Certified IC Engine	11 ppmv, or Tier 4 Certified IC Engine by Jan 1, 2014 for IC engines for which the electric utility rejected an electrical line extension application or that did not qualify for Carl Moyer funding due to no fault of the operator
VOC	Tier 3 or Tier 4 Certified IC Engine	30 ppmv, or Tier 4 Certified IC Engine by Jan 1, 2014 for IC engines for which the electric utility rejected an electrical line extension application or that did not qualify for Carl Moyer funding due to no fault of the operator
<b>New Stationary Non-Emergency IC Engines Powering Electrical Generators</b> (lb-MW-hr or ppmv @ 15% oxygen on a dry basis)		
NOx	No Such Category	0.070 lb/MW-hr* or 2.5 ppmv
VOC		0.010 lb/MW-hr* or 2.5 ppmv

\* IC engines that comply with the lb/MW-hr limits and produce combined heat and electrical power may include one megawatt-hour (MW-hr) for each 3.4 million Btus of useful heat recovered (MWth-hr), in addition to each MW-hr of net electricity produced (MWe-hr).

As established by SCAQMD, the current emission requirements of SCAQMD Rule 1110.2 are equivalent to Best Available Control Technology (BACT) requirements of New Source Review (NSR)<sup>8</sup> and SCAQMD also previously determined that the current emission requirements of SCAQMD Rule 1110.2 satisfied Lowest Achievable Emission Rate (LAER) requirements of Federal NSR for a digester gas-fired IC engine.<sup>9</sup> The recent determinations by SCAQMD that the SCAQMD Rule 1110.2 emission limits are equivalent to BACT and LAER makes it clear that these emission limits go far beyond what is required for RACT.

<sup>5</sup> There are only 2 rich-burn spark ignited engines operating in SCAQMD per discussions with SCAQMD staff

<sup>6</sup> There are no lean-burn spark ignited ag engines operating in SCAQMD per discussions with SCAQMD staff

<sup>7</sup> Information from SCAQMD indicates that there are no stationary non-emergency diesel IC engines that operate in the SCAQMD

<sup>8</sup> South Coast Air Quality Management District Best Available Control Technology Guidelines (February 2, 2018), Part D: BACT Guidelines for Non-Major Polluting Facilities, I.C. Engine, Stationary, Non-Emergency, Non-Electrical Generators and I.C. Engine, Stationary, Non-Emergency, Electrical Generators, <http://www.aqmd.gov/docs/default-source/bact/bact-guidelines/part-d---bact-guidelines-for-non-major-polluting-facilities.pdf>

<sup>9</sup> South Coast Air Quality Management District Best Available Control Technology Guidelines (February 2, 2018), Part B: LAER/BACT Determinations for Major Polluting Facilities, Section I - South Coast AQMD LAER/BACT Determinations, Application No. 546360, I.C. Engine, Digester Gas Fired (April 4, 2017), [http://www.aqmd.gov/docs/default-source/bact/laer-bact-determinations/aqmd-laer-bact/2-2-18\\_laer\\_ocsd\\_biogasice.pdf?sfvrsn=12](http://www.aqmd.gov/docs/default-source/bact/laer-bact-determinations/aqmd-laer-bact/2-2-18_laer_ocsd_biogasice.pdf?sfvrsn=12)

The requirements established in District Rule 4702 and SCAQMD Rule 1110.2 (as of the previous amendment date of June 3, 2016) have been approved by EPA as implementing, at minimum, a RACT level of stringency. The requirements established in the recent amendments of SCAQMD Rule 1110.2 for internal combustion engines go beyond RACT, and have not been widely adopted in SIP rules. Additionally, given the District's existing stringent limits, the cost-effectiveness associated with the installation of additional controls will be far in excess of RACT cost-effectiveness levels.

## **Conclusion**

District Rule 4702 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts' rules.



## 4.12 RULE 4703 (STATIONARY GAS TURBINES)

### District Rule 4703 Description

Rule 4703 limits NO<sub>x</sub> and CO emissions from stationary gas turbines with a ratings equal to or greater than of 0.3 MW or a maximum heat input of more than 3.0 MMBtu/hr. The main rule requirement is the limitation of NO<sub>x</sub> emissions. Laboratory units used in research and testing for the advancement of gas turbine technology, units limited by permit condition to be operated exclusively for firefighting and/or flood control, and emergency standby units limited by permit condition to operate less than 100 hours per calendar year for maintenance and testing purposes are not subject to the emission requirements of this rule.

### How does District Rule 4703 compare with federal and state rules and regulations?

#### Federal Regulations

There are no EPA Control Techniques Guidelines requirements for this source category.

#### A. Alternative Control Techniques (ACT)

District staff conducted a comprehensive evaluation of EPA ACT requirements. The following ACT has not been updated since Rule 4703 was approved as meeting RACT requirements through EPA's approval of the District's 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *Alternative Control Techniques Document—NO<sub>x</sub> Emissions from Stationary Gas Turbines (EPA-453/R-93-007 1993/01)*

#### B. New Source Performance Standards

District staff conducted a comprehensive evaluation of EPA NSPS requirements. The following NSPSs have not been updated since Rule 4703 was approved as meeting RACT requirements through EPA's approval of the District's 2014 RACT SIP. During this approval, it was determined that this rule met or exceeded RACT. Therefore, further evaluation is not necessary at this time.

- *40 CFR 60 Subpart GG - Standards of Performance for Stationary Gas Turbines (2009/03)*
- *40 CFR 60 Subpart TTTT - Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units (2015/10)*

**C. National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)**

- 40 CFR 63 Subpart YYYYY - NESHAP for Stationary Combustion Turbines (2020/03)

Subpart YYYYY establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

This NESHAP does not regulate NOx emissions; therefore, comparison of these two rules is not required.

**State Regulations**

There are no state regulations applicable to this source category.

**How does District Rule 4703 compare to rules in other air districts?**

District staff compared emission limits, optional control requirements, and work practices in District Rule 4703 to comparable requirements in rules from the following nonattainment areas:

- Bay Area AQMD - Regulation 9 Rule 9 (Amended December 6, 2006)
- Sacramento Metropolitan AQMD - Rule 413 (Amended March 24, 2005)
- Ventura County APCD - Rule 74.23 (Amended November 12, 2019)
- South Coast AQMD Rule 1134 (Amended April 5, 2019)

Based on a review of rule requirements implemented prior to EPA’s approval of the 2014 RACT SIP, District staff found that Rule 4703 continues to implement RACT levels of control. For the more recently amended rules, District staff is providing an analysis to demonstrate that RACT continues to be met. This analysis is presented below.

**Ventura County APCD**

- VCAPCD Rule 74.23 (Stationary Gas Turbines)

	SJVAPCD Rule 4703	VCAPCD Rule 74.23
<b>Applicability</b>	Gas turbines ≥ 0.3 MW or a maximum heat input rating of 3 MMBtu/hr	Gas turbines ≥ 0.3 megawatt (MW) or greater

	SJVAPCD Rule 4703	VCAPCD Rule 74.23
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>- Laboratory turbines used in research and testing for the advancement of gas turbine technology.</li> <li>- Units limited by permit condition to be operated exclusively for firefighting and/or flood control.</li> <li>- Emergency standby turbines limited by permit condition to operate less than 100 hours per calendar year for maintenance and testing purposes.</li> </ul>	<ul style="list-style-type: none"> <li>- Laboratory units used in research and testing for the advancement of gas turbine technology.</li> <li>- Units operated exclusively for firefighting and/or flood control.</li> <li>- Units operated less than 200 hours per calendar year.</li> <li>- Emergency standby units operating during either an emergency or maintenance operation. Maintenance operation is limited to 104 hours per calendar year.</li> </ul>
<b>Requirements</b>	The operator of any stationary gas turbine shall not operate a unit in such a manner that results in NO <sub>x</sub> emissions, referenced at 15% O <sub>2</sub> , shall not exceed the following limits:	
	<b>Units Rated &lt; 3 MW</b>	
	Gas Fuel - 9 ppm Liquid Fuel - 25 ppm	<b>Current Limits</b> Gas Fuel - 42 ppm Liquid Fuel - 65 ppm  <b>January 1, 2024 Limits</b> Natural Gas - 2.5 ppm All digester gas fired units - 9 ppm Liquid Fuel - 30 ppm
	<b>Units Rated ≥ 3 MW and &lt; 10 MW</b>	
	<u>Pipeline Gas:</u> Steady State Operation – 8 ppm Non-Steady State Operation – 12 ppm Liquid Fuel – 25 ppm  <u>&lt; 877 hr/yr:</u> Gas Fuel - 9 ppm Liquid Fuel - 25 ppm  <u>≥ 877 hr/year and not listed above:</u> Gas Fuel - 5 ppm Liquid Fuel - 25 ppm	<b>Current Limits</b> <u>&lt; 877 hr/yr:</u> Gas Fuel- 42.0 ppm Liquid Fuel - 65 ppm <u>≥ 877 hr/year</u> Gas Fuel- 42.0 ppm Liquid Fuel - 65 ppm  <b>January 1, 2024 Limits</b> <u>Pipeline Gas:</u> Liquid Fuel - 30 ppm <u>&lt; 877 hr/yr:</u> Natural Gas – 2.5 ppm All digester gas fired units – 9 ppm Liquid Fuel - 30 ppm <u>≥ 877 hr/year</u> Natural Gas – 2.5 ppm All digester gas fired units – 9 ppm Liquid Fuel - 30 ppm
<b>Units Rated ≥ 10 MW</b>		
<u>Combined Cycle:</u> Gas Fuel - 5 ppm (standard) Gas Fuel – 3 ppm (enhanced) Liquid Fuel – 25 ppm <u>Simple Cycle and ≥ 877 hr/yr:</u> Gas Fuel - 5 ppm (standard) Gas Fuel - 3 ppm (enhanced) Liquid Fuel – 25 ppm	<b>Current Limits</b> <u>&lt; 877 hr/yr:</u> Gas Fuel- 42.0 ppm Liquid Fuel - 65 ppm <u>≥ 10.0 MW, no SCR</u> Gas Fuel- 15 ppm Liquid Fuel - 42 ppm <u>≥ 10.0 MW w/ SCR</u>	

	SJVAPCD Rule 4703	VCAPCD Rule 74.23
	<p><u>Simple Cycle and &gt; 200 hr/yr and &lt; 877 hr/yr:</u>  Gas Fuel - 5 ppm  Liquid Fuel – 25 ppm</p> <p><u>Simple Cycle and ≤ 200 hr/yr:</u>  Gas Fuel - 25 ppm  Liquid Fuel – 42 ppm</p>	<p>Gas Fuel- 9 ppm  Liquid Fuel - 25 ppm</p> <p><b>January 1, 2024 Limits</b></p> <p><u>≥ 877 hr/yr:</u>  Natural Gas – 2.5 ppm  All digester gas fired units – 9 ppm  Liquid Fuel - 30 ppm</p> <p><u>&gt; 200 hr/yr and &lt; 877 hr/yr:</u>  Natural Gas – 2.5 ppm  All digester gas fired units – 9 ppm  Liquid Fuel - 30 ppm</p> <p><u>≤ 200 hr/yr:</u>  Gas Fuel - 25 ppm  All digester gas fired units – 9 ppm  Liquid Fuel – 30 ppm</p>

The rule was recently amended in November, 2019, to lower NOx emission limits, however, the limits would not take effect until January 1, 2024. Furthermore, VCAPCD’s Rule 74.23 includes an alternative compliance option for facilities that exempts units from meeting the limits under certain conditions, including unfavorable cost-effectiveness. Given this exemption and limits that, if complied with, extend well beyond RACT, VCAPCD Rule 74.23 does not establish RACT levels.

**South Coast AQMD**

- SCAQMD Rule 1134 (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)

	SJVAPCD Rule 4703	SCAQMD Rule 1134
<b>Applicability</b>	Gas turbines rated ≥ 0.3 MW or with a maximum heat input rating of > 3 MMBtu/hr	Gas turbines rated ≥ 0.3 MW output or with a maximum heat input rating of > 3 MMBtu/hr and operated on gaseous and/or liquid fuel
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>- Laboratory turbines used in research and testing for the advancement of gas turbine technology.</li> <li>- Units limited by permit condition to be operated exclusively for firefighting and/or flood control.</li> <li>- Emergency standby turbines limited by permit condition to operate less than 100 hours per calendar year for maintenance and testing purposes.</li> </ul>	<ul style="list-style-type: none"> <li>- Laboratory turbines used in research and testing</li> <li>- Gas turbines used exclusively for firefighting and/or flood control</li> <li>- Emergency standby units used to provide electrical power, water pumping for flood control or firefighting, potable water pumping, or sewage pumping provided non-resettable engine hour requirement and operate less than 200 hrs/yr.</li> <li>- Stationary gas turbines: subject to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities; located at petroleum refineries, landfills, or publicly owned treatment works; or fueled by landfill gas.</li> <li>- Combined cycle gas turbines installed prior to 4/5/2019 have conditional exemptions</li> <li>- Low use installed prior to 4/15/2019 has specific exemptions and subject to NOx limits at 12 ppmv</li> </ul>
<b>Requirements</b>	The operator of any stationary gas turbine shall not operate a unit in such a manner that results in NOx emissions, referenced at 15% O2, shall not exceed the following limits	A person shall not operate a stationary gas turbine unless NOx emission concentrations, referenced at 15% O2, do not exceed the following limits:

SJVAPCD Rule 4703	SCAQMD Rule 1134	
<b>Units Rated &lt; 3 MW</b>		
Gas Fuel - 9 ppm Liquid Fuel - 25 ppm	<b>Current Limits</b> Gas Fuel - 42 ppm Liquid Fuel - 65 ppm	<b>Jan. 1, 2024 Limits</b> <u>Combined Cycle:</u> Gas Fuel - 2 ppm <u>Simple Cycle:</u> Gas Fuel - 2.5 ppm
<b>Units Rated ≥ 3 MW and &lt; 10 MW</b>		
<u>Pipeline Gas:</u> Steady State Operation – 8 ppm Non-Steady State Operation – 12 ppm Liquid Fuel – 25 ppm  <u>&lt; 877 hr/yr:</u> Gas Fuel - 9 ppm Liquid Fuel - 25 ppm  <u>≥ 877 hr/year and not listed above:</u> Gas Fuel - 5 ppm Liquid Fuel - 25 ppm	<b>Current Limits</b> <u>&lt; 877 hr/yr:</u> Gas Fuel- 42.0 ppm Liquid Fuel - 65 ppm <u>≥ 877 hr/year</u> Gas Fuel- 42.0 ppm Liquid Fuel - 65 ppm <u>Pipeline Gas units with no SCR:</u> 3.5 ppm	<b>Jan. 1, 2024 Limits</b> <u>&lt; 877 hr/yr:</u> Combined Cycle: Gas Fuel - 2 ppm Simple Cycle: Gas Fuel – 2.5 ppm <u>Simple Cycle:</u> 2.5 ppm <u>≥ 877 hr/year:</u> Combined Cycle: Gas Fuel - 2 ppm Simple Cycle: Gas Fuel – 2.5 ppm
<b>Units Rated ≥ 10 MW</b>		
<u>Combined Cycle:</u> Gas Fuel - 5 ppm (standard) Gas Fuel – 3 ppm (enhanced) Liquid Fuel – 25 ppm <u>Simple Cycle and ≥ 877 hr/yr:</u> Gas Fuel - 5 ppm (standard) Gas Fuel - 3 ppm (enhanced) Liquid Fuel – 25 ppm <u>Simple Cycle and &gt; 200 hr/yr and &lt; 877 hr/yr:</u> Gas Fuel - 5 ppm Liquid Fuel – 25 ppm <u>Simple Cycle and ≤ 200 hr/yr:</u> Gas Fuel - 25 ppm Liquid Fuel – 42 ppm	<b>Current Limits</b> <u>&lt; 877 hr/yr:</u> Gas Fuel- 42.0 ppm Liquid Fuel - 65 ppm <u>≥ 10.0 MW, no SCR</u> Gas Fuel- 15 ppm Liquid Fuel - 42 ppm <u>≥ 10.0 MW w/ SCR</u> Gas Fuel- 9 ppm Liquid Fuel - 25 ppm	<b>Jan. 1, 2024 Limits</b> <u>Combined Cycle:</u> Gas Fuel: 2 ppm <u>&lt; 877 hr/yr:</u> Combined Cycle: Gas Fuel - 2 ppm Simple Cycle: Gas Fuel – 2.5 ppm <u>Simple Cycle and &gt; 200 hr/yr and &lt; 877 hr/yr:</u> 2.5 ppm <u>Simple Cycle and ≤ 200 hr/yr:</u> 2.5 ppm

The requirements established in District Rule 4703 and SCAQMD Rule 1134 (as amended on August 8, 1997) have been previously approved by EPA as implementing, at minimum, a RACT level of stringency. When the new SCAQMD limits do take effect, the requirements of SCAQMD Rule 1134 for stationary gas turbines will go beyond RACT, and have not been widely adopted in SIP rules. Additionally, given the District’s existing stringent limits, the cost-effectiveness associated with the installation of additional controls will be far in excess of RACT cost-effectiveness levels.

### Conclusion

District Rule 4703 meets or exceeds federal RACT requirements for this source category based upon evaluation of applicable federal regulations, state standards, and other air districts’ rules.