South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF COMPLETION OF A DRAFT SUBSEQUENT ENVIRONMENTAL ASSESSMENT TO THE SEPTEMBER 2014 FINAL ENVIRONMENTAL ASSESSMENT FOR RULE 1111**

PROJECT TITLE: **PROPOSED AMENDED RULE (PAR) 1111 – REDUCTION OF NOX EMISSIONS FROM NATURAL-GAS-FIRED, FAN-TYPE CENTRAL FURNACES**

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (SCAQMD) is the Lead Agency and has prepared a Draft Subsequent Environmental Assessment (SEA) to analyze environmental impacts from the project identified above pursuant to its certified regulatory program (SCAQMD Rule 110). The Draft SEA includes a project description and analysis of potential adverse environmental impacts that could be generated from the proposed project. The purpose of this letter, the attached Notice of Completion (NOC), and the Draft SEA, is to allow public agencies and the public the opportunity to obtain, review and comment on the environmental analysis.

This letter, the attached NOC, and the Draft SEA are not SCAQMD applications or forms requiring a response from you. Their purpose is simply to provide information to you on the above project. If the proposed project has no bearing on you or your organization, no action on your part is necessary. The Draft SEA and other relevant documents may be obtained by calling the SCAQMD Public Information Center at (909) 396-2039 or accessing the SCAQMD's CEQA website at: http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects.

Comments focusing on your area of expertise, your agency's area of jurisdiction, if applicable, or issues relative to the environmental analysis for the proposed project will be accepted during a 45-day public review and comment period beginning Tuesday, December 26, 2017 and ending at 5:00 p.m. on Friday, February 9, 2018. **Please send any comments relative to the CEQA analysis in the Draft SEA to Mr. Ryan Bañuelos (c/o CEQA) at the address shown above.** Comments can also be sent via facsimile to (909) 396-3982 or email to rbanuelos@aqmd.gov. Please include the name and phone number of the contact person. Questions regarding the proposed amended rule language should be directed to Ms. Yanrong Zhu at (909) 396-3289 or by email to yzhu1@aqmd.gov.

The Public Hearing for the proposed amended rule is scheduled for March 2, 2018. (Note: Public meeting dates are subject to change).

Date: December 22, 2017 **Signature:** Barbara Radlein

Barbara Radlein
Program Supervisor, CEQA Special Projects
Planning, Rules, and Area Sources

Reference: California Code of Regulations, Title 14, Sections 15085, 15087, 15105, 15252 and 15372

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765-4182

NOTICE OF COMPLETION OF A DRAFT SUBSEQUENT ENVIRONMENTAL ASSESSMENT

Project Title: Proposed Amended Rule (PAR) 1111- Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type, Central Furnaces

Project Location: The proposed project may affect facilities located throughout the South Coast Air Quality Management District's (SCAQMD) jurisdiction, which covers all of Orange County, the urban portions of Los Angeles and San Bernardino counties southwest of the San Bernardino and San Gabriel mountains, and nearly all of Riverside County, with the exception of communities near the state border.

Description of Nature, Purpose, and Beneficiaries of Project:
SCAQMD staff is proposing to amend Rule 1111 in order to resolve compliance issues that have been raised by stakeholders. If adopted, PAR 1111 would increase the mitigation fee from $200 for each non-compliant condensing furnace and $150 each for all other non-compliant furnaces regulated under this Rule to $400 for all non-compliant units and extend the dates for complying with the NOx limit for the following equipment categories: 1) condensing furnaces from April 1, 2018, to October 1, 2019; 2) non-condensing furnaces from October 1, 2018, to October 1, 2019; 3) weatherized furnaces from October 1, 2019, to October 1, 2020; and 4) mobile home furnaces from October 1, 2021, to October 1, 2022. If the compliance dates are extended, PAR 1111 is expected to result in foregone NOx emissions reductions of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, all of which exceed the SCAQMD's regional air quality CEQA significance threshold for NOx during operation. The analysis of PAR 1111 in the Draft SEA identified potentially significant adverse air quality impacts. However, the NOx emissions reductions foregone will eventually be achieved because existing furnaces will be regularly replaced and upgraded over time with cleaner units. In addition, the mitigation fee will generate emission reductions from the projects to be financed with the fee. No facilities that manufacture equipment that would be subject to PAR 1111 have been identified on lists compiled by the California Department of Toxic Substances Control per Government Code Section 65962.5.

Lead Agency:	**Division:**
South Coast Air Quality Management District	Planning, Rule Development and Area Sources

The Draft SEA and all supporting documentation are available at:	**or by calling or emailing:**	**or by accessing the SCAQMD's website at:**
SCAQMD Headquarters 21865 Copley Drive Diamond Bar, CA 91765	(909) 396-2039 or PICrequests@aqmd.gov	http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects

The Notice of Completion is provided to the public through the following:

☑ Los Angeles Times (December 26, 2017)
☑ SCAQMD Mailing List & Interested Parties
☑ SCAQMD Public Information Center
☑ SCAQMD Website

Draft SEA Review Period (45 days):
December 26, 2017 – February 9, 2018

Scheduled Public Meeting Date(s) (subject to change):
SCAQMD Governing Board Hearing: March 2, 2018, 9:00 a.m.; SCAQMD Headquarters – Auditorium

The proposed project may have statewide, regional, or areawide significance; therefore, a CEQA scoping meeting was required (pursuant to Public Resources Code Section 21083.9 (a)(2)) and held at the SCAQMD's Headquarters in conjunction with the Public Workshop on October 19, 2017.

Send CEQA Comments to:	**Phone:**	**Email:**	**Fax:**
Mr. Ryan Bañuelos	(909) 396-3479	rbanuelos@aqmd.gov	(909) 396-3982
Direct Questions on PAR 1111 to:	**Phone:**	**Email:**	**Fax:**
Ms. Yanrong Zhu	(909)396-3289	yzhu1@aqmd.gov	(909) 396-3324

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Subsequent Environmental Assessment to the September 2014 Final Environmental Assessment for Proposed Amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces

December 2017

SCAQMD No. 140722JI/12012017RB
State Clearinghouse No: TBD

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CHAPTER 1

EXECUTIVE SUMMARY

Introduction

California Environmental Quality Act (CEQA)

Previous CEQA Documentation for Rule 1111

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Areas of Controversy

Executive Summary

INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977[1] as the agency responsible for the development and enforcement of air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin. In 1977, amendments to the federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that fail to meet all federal ambient air quality standards (CAA Section 172), and similar requirements exist in state law (Health and Safety Code Section 40462). The federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO2), and particulate matter with an aerodynamic diameter of less than 10 microns (PM10). In 1997, the United States Environmental Protection Agency (U.S. EPA) promulgated ambient air quality standards for particulate matter with an aerodynamic diameter less than 2.5 microns (PM2.5). The California Clean Air Act (CCAA), adopted in 1988, requires the SCAQMD to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO2), and NO2 by the earliest practicable date. (Health and Safety Code Section 40910.) The CCAA also requires a three-year plan review, and, if necessary, an update to the SIP. The U.S. EPA is required to periodically update the national ambient air quality standards (NAAQS).

By statute, the SCAQMD is required to adopt an air quality management plan (AQMP) that demonstrates compliance with all federal and state ambient air quality standards for areas within SCAQMD[2] jurisdiction. The SCAQMD must also adopt rules and regulations that carry out the AQMP[3]. The AQMP is a regional blueprint for how the SCAQMD will achieve air quality standards and healthful air. The 2016 AQMP was adopted by the SCAQMD Governing Board on March 3, 2017[4]. The 2016 AQMP implements regulatory measures to reduce emissions of particulate matter (PM), oxides of sulfur (SOx), and oxides of nitrogen (NOx) to attain the state and national ambient air quality standards for ozone, particulate matter with an aerodynamic diameter of 10 microns or less (PM10), and particulate matter with an aerodynamic diameter of 2.5 microns or less (PM2.5). The 2016 AQMP states that both NOx and volatile organic compounds (VOC) emissions need to be addressed. However, the 2016 AQMP emphasizes that NOx emission reductions are more effective to reduce the formation of ozone and PM2.5. Ozone is a criteria pollutant shown to adversely affect human health and is formed when volatile organic compounds (VOCs) react with NOx in the atmosphere. NOx is a precursor to the formation of ozone and PM2.5, and NOx emission reductions are necessary to achieve the ozone standard attainment. NOx emission reductions also contribute to attainment of PM2.5 standards.

The CCAA requires air districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures pursuant to Health and Safety Code Sections 40913, 40914, and 40920.5. The term "feasible" is defined in the Title 14 of the California Code of Regulations, Section 15364, as a measure "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., ch. 324 (codified at Health and Safety Code Sections 40400-40540).

[2] Health and Safety Code Section 40460(a).

[3] Health and Safety Code Section 40440(a).

[4] SCAQMD, Final 2016 Air Quality Management Plan, March 2017. http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp

Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces was adopted in December 1978 and later amended in July 1983, November 2009, and September 2014. Rule 1111 was developed to reduce NOx emissions from residential and commercial gas-fired fan-type space heating furnaces with a rated heat input capacity of less than 175,000 British thermal units (BTU) per hour or, for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour. Rule 1111 applies to manufacturers, distributors, sellers, and installers of residential furnaces and requires manufacturers to certify that each furnace model offered for sale in the SCAQMD complies with the emission limit using specific test methods approved by the SCAQMD and U.S. EPA. Rule 1111 provides manufacturers an alternative compliance option to pay a per-unit mitigation fee for up to 36 months past the applicable compliance date. Most single family homes, many multi-unit residences, and some small commercial buildings in the SCAQMD use this type of space heating equipment.

When first adopted, Rule 1111 addressed all sizes of space heating furnaces and required all residential and commercial space heating furnaces to meet a NOx emission limit of 40 nanograms per Joule (ng/J) of heat output. The July 1983 amendments limited applicability to units sized for residences and exempted larger commercial space heaters (e.g., furnaces with a heat input of less than 175,000 BTU per hour or, for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour). The July 1983 amendments also exempted units manufactured for use in mobile homes (manufactured housing), revised the definition of efficiency, and clarified testing procedures.

In November 2009, Rule 1111 was amended to make it consistent with the objectives of the 2007 Air Quality Management Plan (AQMP) Control Measure CMB-03 - Reductions from Commercial Space Heating by establishing a more stringent NOx emission limit of 14 ng/J, and required the three major categories of residential furnace – condensing (high efficiency), non-condensing (standard), and weatherized – to meet the lower limit by October 1, 2014, October 1, 2015, and October 1, 2016, respectively. Furthermore, new mobile home heating units, which were unregulated prior to the November 2009 amendments, had to meet a NOx limit of 40 ng/J by October 1, 2012, and 14 ng/J by October 1, 2018. At the time, the NOx emission limit of 14 ng/J reflected a 65 percent reduction from the previous NOx emission limit of 40 ng/J. To facilitate the depletion of existing inventories and to ensure a smooth transition to equipment that complied with the more stringent NOx limit, Rule 1111 also provided a temporary 10-month exemption (e.g., sell-through period) for units manufactured and delivered into the SCAQMD prior to the compliance date.

To encourage and accelerate the development of cleaner technology, the November 2009 amendments provided a financial incentive for achieving early compliance with the 14 ng/J NOx emission limit, and three million dollars was allocated for this purpose. Specifically, for any manufacturer that delivered and sold furnaces that complied with the 14 ng/J NOx emission limit into the SCAQMD 90 days prior to the applicable compliance date were eligible to receive a $75 payment for each standard efficiency furnace and $90 for each high-efficiency unit. However, to date, no manufacturer applied for this incentive, as products have yet to be fully commercialized.

The November 2009 amendments also required a technology assessment, which was presented to the Governing Board on January 10, 2014. The technology assessment evaluated both the feasibility of the more stringent NOx emission limit and the implementation schedule. The SCAQMD Technology Advancement Office (TAO) initiated a Request for Proposals (RFP) to develop prototype residential furnaces that would meet the 14 ng/J NOx emission limit. Four technology development projects were initiated in 2010 and completed in 2013. Of the total cost

of $1,447,737, The Gas Company provided $447,737 and the San Joaquin Valley Unified Air Pollution Control District provided $50,000. The prototype furnaces developed through these four projects demonstrated that the 14 ng/J NOx emission limit is achievable for all types of forced air residential heating furnaces produced for the United States market. However, the technology assessment concluded that additional time would be needed to commercialize 14 ng/J furnaces.

The September 2014 amendments delayed the compliance date for condensing furnaces from April 1, 2015, to April 1, 2018; for non-condensing furnaces from October 1, 2015 to October 1, 2018, for weatherized furnaces from October 1, 2016, to October 1, 2019; and for mobile home furnaces from October 1, 2018, to October 1, 2021. These amendments also provided an alternative compliance option that allowed manufacturers to pay a per unit mitigation fee of $200 for each condensing furnace and $150 for each other type of furnace distributed or sold into the SCAQMD, in lieu of meeting the 14 ng/J NOx emission limit. The mitigation fee was to be used to offset the NOx emissions reductions foregone by funding other NOx emission reduction projects. The September 2014 amendments allow the mitigation fee/alternative compliance option to be used for up to 36 months past the applicable compliance date. Depending on furnace type, the mitigation fee option will end, and the 14 ng/J NOx emission limit will phase in, over the period from April 1, 2018, to October 1, 2021. At the time, the manufacturers endorsed the mitigation fee/alternative compliance option. All manufacturers have been submitting mitigation fees that correspond to recent sales of non-compliant furnaces.

In April 2016, the Air Conditioning Heating and Refrigeration Institute (AHRI) and original equipment manufacturers (OEMs) met with SCAQMD staff and asserted that safety and reliability concerns, among other issues, had prevented the development of compliant units for commercialization. To monitor the status of technology development, SCAQMD staff surveyed manufacturers from May 2016 to July 2016 and scheduled individual meetings with stakeholders (eight OEMs, two burner manufacturers, and other interested parties) in March, April, and May 2017. SCAQMD staff also held two Task Force meetings on April 27, 2017, and May 25, 2017 to discuss implementation status and rule recommendations. A result of these efforts, SCAQMD staff was able to confirm that compliant furnaces had not been introduced into the market; however, three OEMs have, to date, developed 14 ng/J compliant products that were undergoing field testing. Moreover, one manufacturer indicated that a compliant product would be commercially available prior to the 2017 winter season. Initial recommendations by SCAQMD staff for Rule 1111 amendments were made to the Stationary Source Committee and staff proceeded with rule-making to provide additional time for compliance through the use of the mitigation fee option. As a result, SCAQMD staff now contains a proposal in Proposed Amended Rule (PAR) 1111 to further extend the compliance dates in the alternative compliance option for condensing furnaces, non-condensing furnaces, weatherized furnaces, and mobile home furnaces in accordance with feedback received from OEMs. PAR 1111 also contains a proposal to increase the mitigation fee for non-compliant units.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The California Environmental Quality Act (CEQA) requires that all potential adverse environmental impacts of proposed projects be evaluated and that methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented, if feasible. The purpose of the CEQA process is to inform the SCAQMD Governing Board, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing the proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

Public Resources Code Section 21080.5 allows public agencies with regulatory programs to prepare a plan or other written documents in lieu of a negative declaration or environmental impact report once the secretary of the resources agency has certified the regulatory program. The SCAQMD's regulatory program was certified by the secretary of resources agency on March 1, 1989, and has been adopted as, and is implemented by, SCAQMD Rule 110 – Rule Adoption Procedures to Assure Protection and Enhancement of the Environment. Pursuant to Rule 110, the SCAQMD typically prepares an Environmental Assessment (EA) to evaluate the environmental impacts for rule projects proposed for adoption or amendment.

PAR 1111 is considered a "project" as defined by CEQA. CEQA requires that all potential adverse environmental impacts of proposed projects be evaluated and that methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented if feasible. The purpose of the CEQA process is to inform the SCAQMD Governing Board, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing the proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

PAR 1111 contains amendments that revise existing requirements included in Rule 1111, as amended in September 2014, in order to resolve compliance issues raised by stakeholders. In particular, PAR 1111 would increase the mitigation fee from $200 for each non-compliant condensing furnace and $150 each for all other non-compliant furnaces regulated under this Rule to $400 for all non-compliant units and extend the dates for complying with the NOx limit for the following equipment categories: 1) condensing furnaces from April 1, 2018, to October 1, 2019; 2) non-condensing furnaces from October 1, 2018, to October 1, 2019; 3) weatherized furnaces from October 1, 2019, to October 1, 2020; and 4) mobile home furnaces from October 1, 2021, to October 1, 2022. If the compliance dates are extended, PAR 1111 is expected to result in foregone NOx emissions reductions of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, all of which exceed the SCAQMD's regional air quality CEQA significance threshold for NOx during operation. Analysis of PAR 1111 indicates that the estimated amount of NOx emission reductions foregone will substantially revise the existing requirements included in Rule 1111 as last amended in September 2014. As such, SCAQMD staff has determined that PAR 1111 contains new information of substantial importance which was not known and could not have been known at the time the Final Environmental Assessment (EA) was certified for the September 2014 amendments to Rule 1111 (referred to herein as the September 2014 Final EA). However, aside from the topic of air quality, PAR 1111 is not expected to create new significant effects for any other environmental topic areas. Thus, analysis of the proposed project indicates that the type of CEQA document appropriate for the proposed project is a Subsequent Environmental Assessment (SEA), in lieu of an EA. The SEA is a substitute CEQA document, prepared in lieu of a Subsequent Environmental Impact Report (EIR) with significant impacts (CEQA Guidelines Section 15162(b)), pursuant to the SCAQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(l); codified in SCAQMD Rule 110). The SEA is also a public disclosure document intended to: 1) provide the lead agency, responsible agencies, decision-makers and the general public with information on the environmental impacts of the proposed project; and 2) be used as a tool by decision-makers to facilitate decision making on the proposed project.

Because the new potentially significant adverse effects to operational air quality that may result from implementing PAR 1111 were not analyzed in the September 2014 Final EA, the SCAQMD,

as lead agency for the proposed project has prepared this Subsequent EA (SEA) with significant impacts pursuant to its Certified Regulatory Program. The September 2014 Final EA identified the topic of operational air quality in the environmental checklist as the only topic that would be affected by the proposed rule amendments at that time. However, the analysis in the September 2014 Final EA concluded that the operational air quality impacts were at less than significant levels. Since PAR 1111 is now shown to have potentially significant adverse air quality impacts during operation as a result of projected NOx emission reductions foregone, the focus of the analysis in this Draft SEA is limited to the operational air quality as the only environmental topic area to be analyzed. In addition, since PAR 1111 may have statewide, regional, or areawide significance, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) and was held at the SCAQMD's Headquarters in conjunction with the Public Workshop on October 19, 2017. No CEQA comments were made at the Public Workshop/CEQA scoping meeting relative to PAR 1111. Further, pursuant to CEQA Guidelines Section 15252, since significant adverse impacts were identified, an alternatives analysis and mitigation measures are required. The Draft SEA has been released for a 45-day public review and comment period from Tuesday, December 26, 2017 to Friday, February 9, 2018 at 5:00 p.m. For any comments received relative to CEQA analysis in this Draft SEA, SCAQMD staff will include the comment letters along with responses to comments in an appendix to the Final SEA.

The September 2017 Final EA, upon which this SEA relies, is available from the SCAQMD's website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2014/par_1111_fea_wapps.pdf; by visiting the Public Information Center at SCAQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765; or by contacting Fabian Wesson, Public Advisor by phone at (909) 396-2039 or by email at PICrequests@aqmd.gov.

Prior to making a decision on the adoption of PAR 1111, the SCAQMD Governing Board must review and certify the Final SEA, including responses to comments, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PAR 1111.

PREVIOUS CEQA DOCUMENTATION FOR RULE 1111

This Draft SEA is a comprehensive environmental document that analyzes potential environmental impacts from PAR 1111. SCAQMD rules, as ongoing regulatory programs, have the potential to be revised over time due to a variety of factors (e.g., regulatory decisions by other agencies, new data, and lack of progress in advancing the effectiveness of control technologies to comply with requirements in technology forcing rules, etc.). Rule 1111 was adopted in December 1978 and amended in July 1983, November 2009, and September 2104. A CEQA document was prepared for the amendments to Rule 1111 in 2009 and 2014.

The following summarizes the two previously prepared CEQA documents for Rule 1111 and is included for informational purposes. These documents are available for downloading from the SCAQMD's website via the weblinks immediately following the summaries. In addition, hardcopies of these CEQA documents can be obtained by submitting a Public Records Act request to the SCAQMD's Public Records Unit.

Final Environmental Assessment for Proposed Amended Rule 1111 (November 2009)

Final EA for Proposed Amended Rule 1111 – NOx Emissions from Natural Gas-Fire, Fan-type Central Furnaces; November 2009 (SCAQMD No. 090902JI; State Clearinghouse No. 2009091100): The November 2009 Rule 1111 amendment established a NOx emission limit of 14 ng/J, and required the three major categories of residential furnaces – condensing, non-condensing, and weatherized – to meet the new emission limit by October 1, 2014, October 1, 2015, and October 1, 2016 respectively. The November 2009 amendments to Rule 1111 was estimated to reduce NOx emissions by less than 0.1 ton per day by 2014 and 3.1 tons per day by 2023. The November 2009 amendments to Rule 1111 also required a technology assessment be performed to evaluate the feasibility of the 14 ng/J NOx emission limit and the rule implementation schedule. A Draft EA for the November 2009 amendments to Rule 1111 was prepared and no significant adverse environmental impacts were identified. The Draft EA for the November 2009 amendments to Rule 1111 was released for a 30-day public review and comment period from September 24, 2009 to October 23, 2009 and no comment letters were received. The Final EA was certified by the SCAQMD Governing Board on November 6, 2009. This document can be obtained by visiting the following website at:
http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2009/final-environmental-assessment-for-proposed-amended-rule-1111.pdf

Final Environmental Assessment for Proposed Amended Rule 1111 (September 2014)

Final EA for Proposed Amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces; September 2014 (SCAQMD No. 140722JI; State Clearinghouse No. 2009091100): The September 2014 amendments to Rule 1111 delayed the compliance date for condensing furnaces and provided an alternative compliance option that allowed manufacturers subject to Rule 1111 to pay a per unit mitigation fee in lieu of meeting the 14 ng/J NOx emission limit that was scheduled to phase in between April 1, 2018, and October 1, 2021. The mitigation fee option was based on furnace type. The September 2014 amendments to Rule 1111 were estimated to result in a delay of NOx emission reductions by 46 pounds per day during until the compliance date. A Draft EA for the September 2014 amendments to Rule 1111 was prepared and no significant adverse environmental impacts were identified. The September 2014 amendment to Rule 1111 were approved into the State Implementation Plan (SIP) in March 2016 and the mitigation fee was earmarked to offset NOx emissions reductions foregone. A Draft EA for the September 2014 amendments to Rule 1111 was released for a 30-day public review and comment period from July 29, 2014 to August 27, 2014 and no comment letters were received. The Final EA was prepared and certified by the SCAQMD Governing Board on September 5, 2014. This document can be obtained by visiting the following website at:
http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2014/par_1111_fea_wapps.pdf

INTENDED USES OF THIS DOCUMENT

In general, a CEQA document is an informational document that informs a public agency's decision-makers and the public generally of potentially significant adverse environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines Section 15121). A public agency's decision-makers must consider the information in a CEQA document prior to making a decision on the project. Accordingly, this Draft SEA is intended to: a) provide the SCAQMD Governing Board and the public with information on the environmental effects of the proposed project; and

b) be used as a tool by the SCAQMD Governing Board to facilitate decision-making on the proposed project.

Additionally, CEQA Guidelines Section 15124(d)(1) requires a public agency to identify the following specific types of intended uses of a CEQA document:

1. A list of the agencies that are expected to use the SEA in their decision-making;

2. A list of permits and other approvals required to implement the project; and

3. A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

In addition to the SCAQMD's Governing Board which will consider the SEA for PAR 1111 in their decision-making, the California Air Resources Board (a state agency) and the United States Environmental Protection Agency (a federal agency) will be reviewing PAR 1111 and all supporting documents, including the SEA, as part of the process for considering the inclusion of PAR 1111 into the State Implementation Plan. There are no permits or other approvals required to implement PAR 1111. Moreover, PAR 1111 is not subject to any other related environmental review or consultation requirements.

To the extent that local public agencies, such as cities, county planning commissions, et cetera, are responsible for making land use and planning decisions related to projects that must comply with the requirements in PAR 1111, they could possibly rely on this SEA during their decision-making process. Similarly, other single purpose public agencies approving projects that utilize compliant equipment subject to PAR 1111 may rely on this SEA.

AREAS OF CONTROVERSY

CEQA Guidelines Section 15123(b)(2) requires a public agency to identify the areas of controversy in the CEQA document, including issues raised by agencies and the public. Over the course of developing the proposed project, concerns regarding PAR 1111 were expressed by representatives of industry and environmental groups, either in public meetings or in written comments, which are highlighted in Table 1-1.

Pursuant to CEQA Guidelines Section 15131(a), "[e]conomic or social effects of a project shall not be treated as significant effects on the environment." CEQA Guidelines Section 15131(b) states further, "[e]conomic or social effects of a project may be used to determine the significance of physical changes caused by the project." Physical changes that may be caused by PAR 1111 have been evaluated in Chapter 4 of this Draft SEA. No direct or indirect physical changes resulting from economic or social effects have been identified as a result of implementing PAR 1111.

To date, no other controversial issues relevant to the CEQA analysis were raised as a part of developing the proposed project.

Table 1-1
Areas of Controversy

Area of Controversy	Topics Raised by the Public	SCAQMD Evaluation
Lack of availability of compliant products in the market and the expiration of compliance dates for all but one type of furnace.	OEMs claimed that the lack of adequate safety and reliability testing had prevented the development of compliant units for commercialization.	SCAQMD staff conducted a survey of manufacturers and staff has continued to monitor the status of technology development. The compilation of the survey responses indicated that while compliant furnaces were not yet fully introduced into the market, the OEMs developed products that have been demonstrated during field tests to comply with the NOx emission limit of 14 ng/J. One OEM has a compliant non-condensing product that is commercially available for the winter 2017 season. SCAQMD staff recommended providing additional time in PAR 1111 to allow OEMs to develop compliant units.
Mitigation Fee	OEMs opined that the new mitigation fee was too high and would impact businesses and consumers.	SCAQMD staff proposed a fee increase to incentivize early conversion in light of the delayed compliance date and pay for a rebate program, which is a separate action from the rule amendment. Staff will also consider a tiered approach to the mitigation fee to reduce spike in fiscal burden.
Compliance Dates	OEMs raised concerns over the ability to comply with proposed new compliance dates in Rule 1111.	SCAQMD will consider a tiered approach to the compliance dates to lessen the financial impact to businesses and consumers.

EXECUTIVE SUMMARY

CEQA Guidelines Section 15123 requires a CEQA document to include a brief summary of the proposed actions and their consequences. In addition, areas of controversy must also be included in the executive summary (see preceding discussion). This Draft SEA consists of the following chapters: Chapter 1 – Executive Summary; Chapter 2 – Project Description; Chapter 3 – Existing Setting, Chapter 4 – Potential Environmental Impacts and Mitigation Measures; Chapter 5 – Project Alternatives; and various appendices. The following subsections briefly summarize the contents of each chapter.

Summary of Chapter 1 – Executive Summary

Chapter 1 includes an introduction of the proposed project and a discussion of the legislative authority that allows the SCAQMD to amend and adopt air pollution control rules, identifies general CEQA requirements and the intended uses of this CEQA document, and summarizes the remaining four chapters that comprise this SEA.

Summary of Chapter 2 - Project Description

PAR 1111 reflects the proposed project and is a culmination recommendations made throughout the public engagement process including the April 2016 meeting between the Air Conditioning Heating and Refrigeration Institute and OEMs, the survey of manufacturers conducted between May 2016 and July 2016, the Task Force meetings held on April 27, 2017 and May 25, 2017, the Working Group Meetings held on July 27, 2017, September 21, 2017, and November 15, 2017, and the Public Workshop/CEQA Scoping Meeting held on October 19, 2017. If adopted, PAR 1111 would increase the mitigation fee to $400 for non-compliant units and further extend the dates for complying with the NOx limit established in Rule 1111 for the following equipment categories: 1) condensing furnaces from April 1, 2018, to October 1, 2019; 2) non-condensing furnaces from October 1, 2018, to October 1, 2019; 3) weatherized furnaces from October 1, 2019, to October 1, 2020; and 4) mobile home furnaces from October 1, 2021, to October 1, 2022.

If PAR 1111 is adopted and the alternative compliance option is extended, PAR 1111 is expected to result in foregone NOx emissions reductions of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, all of which exceed the SCAQMD's regional air quality CEQA significance threshold. However, the NOx emission reductions foregone will be eventually achieved because existing units will be eventually replaced and upgraded over time.

Other minor changes are also proposed for clarity and consistency throughout the rule. A copy of PAR 1111 can be found in Appendix A of this Draft SEA.

Summary of Chapter 3 - Existing Setting

Pursuant to the CEQA Guidelines Section 15125, Chapter 3 – Existing Setting includes a description of the environmental topics areas as being potentially adversely affected by the proposed project. As previously explained, PAR 1111 is a revision to the previously approved project that was analyzed in the September 2014 Final EA and only the topic of operational air quality was identified as having less than significant adverse environmental impacts. All other environmental topic areas analyzed in the September 2014 Final EA were shown to have no significant impacts. Since PAR 1111 is now shown to have potentially significant adverse air quality impacts during operation as a result of projected NOx emission reductions foregone, the focus of the analysis in this Draft SEA is limited to the operational air quality as the only environmental topic area to be analyzed. The following discussion briefly highlights the existing setting for the topic of air quality.

Air Quality

Air quality in the area of the SCAQMD's jurisdiction has shown substantial improvement over the last two decades. Nevertheless, some federal and state air quality standards are still exceeded frequently and by a wide margin. Of the NAAQS established for seven criteria pollutants (ozone, lead, sulfur dioxide, nitrogen dioxide, carbon monoxide, PM10 and PM2.5), the area within the SCAQMD's jurisdiction is only in attainment with the NAAQS for carbon monoxide, sulfur dioxide, and nitrogen dioxide. Chapter 3 provides a brief description of the existing air quality setting for each criteria pollutant, as well as the human health effects resulting from exposure to each criteria pollutant.

Summary of Chapter 4 - Environmental Impacts

CEQA Guidelines Section 15126(a) requires a CEQA document to identify and focus on the "significant environmental effects of the proposed project." Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. In addition, CEQA Guidelines Section 15126(b) requires a CEQA document to identify the significant environmental effects that cannot be avoided if the proposed project is implemented. CEQA Guidelines Section 15126(c) also requires a CEQA document to consider and discuss the significant irreversible environmental changes that would be involved if the proposed project is implemented. Further, CEQA Guidelines Section 15126(e) requires a CEQA document to consider and discuss mitigation measures proposed to minimize the significant effects. Finally, CEQA Guidelines Section 15130 requires a CEQA document to discuss whether the proposed project has cumulative impacts. Chapter 4 considers and discusses each of these requirements.

Potential Environmental Impacts Found To Be Significant

Operational air quality is the only environmental topic area identified in this Draft SEA that has a potentially significant adverse impact and is reviewed in Chapter 4.

Potential Environmental Impacts Found Not To Be Significant

The September 2014 amendments to Rule 1111 provided manufacturers additional time to produce residential furnaces that meet the NOx emission limit of 14 ng/J. Because the September 2014 amendments to Rule 1111 would not have any significant adverse effects on the environment, SCAQMD staff prepared an environmental assessment with no significant impacts (e.g., the September 2014 Final EA). The September 2014 Final EA evaluated 17 environmental topic areas and only the topic of air quality and greenhouse gas emissions was identified as having the potential to be adversely affected if the September 2014 amendments to Rule 1111 were implemented. However, after an assessment of air quality and greenhouse gas emissions impacts, the September 2014 amendments to Rule 1111 were expected to result in a delay of NOx emission reductions from October 1, 2014, until April 1, 2015, of up to 46 pounds per day, which is below the SCAQMD Mass Daily Air Quality Significance Threshold for operational NOx emissions (55 lbs/day). Thus, the September 2014 Final EA concluded that the impacts to air quality would be less than significant. All of the remaining 16 environmental topic areas were also concluded to have no significant or less than significant direct or indirect adverse effects.

The effects of implementing PAR 1111 would result in foregone NOx emissions reductions of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, all of which exceed the SCAQMD Mass Daily Air Quality Significance Threshold for operational NOx emissions (55 lbs/day). By preparing a SEA for PAR 1111, since the topic of air quality is the only environmental topic area that would be affected by PAR 1111, no other environmental topic areas have been evaluated in this SEA. Thus, the PAR 1111 Draft SEA is consistent with the conclusions reached in the previously certified document (e.g., the September 2014 Final EA) that aside from the topic of operational air quality, there would be no other significant adverse effects from the implementation of PAR 1111. Thus, PAR 1111 would have no significant or less than significant direct or indirect adverse effects on the following environmental topic areas.

- aesthetics

- air quality during construction and greenhouse gas emissions during construction and operation
- agriculture and forestry resources
- biological resources
- cultural resources
- energy
- geology and soils
- hazards and hazardous materials
- hydrology and water quality
- land use and planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- solid and hazardous waste
- transportation and traffic

Other CEQA Topics

CEQA documents are also required to consider and discuss the potential for growth-inducing impacts (CEQA Guidelines Section 15126(d)) and to explain and make findings about the relationship between short-term uses and long-term productivity. (CEQA Guidelines Section 15065(a)(2).) Additional analysis of the proposed project confirms that it would not result in irreversible environmental changes or the irretrievable commitment of resources, foster economic or population growth or the construction of additional housing. Further, implementation of the proposed project is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement.

Summary Chapter 5 - Alternatives

Four alternatives to the proposed project are summarized in Table 1-2: Alternative A (No Project), Alternative B (More Stringent NOx Limit), Alternative C (Less Stringent Timing), and Alternative D (More Mitigation). Pursuant to the requirements in CEQA Guidelines Section 15126.6(b) to mitigate or avoid the significant effects that a project may have on the environment, a comparison of the potentially significant adverse operational air quality impacts from each of the project alternatives for the individual rule components that comprise the proposed project is provided in Table 1-3. Aside from operational air quality impacts, no other potentially significant adverse impacts were identified for the proposed project or any of the project alternatives. The proposed project is considered to provide the best balance between the remaining emission reductions that other components of Rule 1111 may continue to achieve and the adverse environmental impacts due to operation activities (from emission reductions foregone) while meeting the objectives of the project. Therefore, the proposed project is preferred over the project alternatives.

Table 1-2
Summary of the Proposed Project and Alternatives

KEY RULE COMPONENTS	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent NOx Limit	ALTERNATIVE C Less Stringent Timing	ALTERNATIVE D More Mitigation
NOx Limit	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018	• **10 ng/J for all equipment types** • **10 ng/J for mobile home furnaces** by October 1, 2018	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018
Alternate Compliance Option to Meeting NOx Limit	Allowed to pay a mitigation fee in lieu of meeting NOx limit but with **extended compliance dates and increased mitigation fees** Mitigation Fee Schedule: • **Condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Non-condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Weatherized Unit** $400 per unit *Date of Adoption – September 30, 2020* • **Mobile Home Unit** $400 per unit *October 1, 2018 – September 30, 2022*	Allowed to pay a mitigation fee in lieu of meeting NOx limit with **existing rule compliance dates** Mitigation Fee Schedule: • **Condensing Unit** $200 per unit *April 1, 2015 – March 31, 2018* • **Non-condensing Unit** $150 per unit *October 1, 2015 – September 30, 2018* • **Weatherized Unit** $150 per unit *October 1, 2016 – September 30, 2019* • **Mobile Home Unit** $150 per unit • *October 1, 2018 – September 30, 2021*	Allowed to pay a mitigation fee in lieu of meeting NOx limit but with extended compliance dates and increased mitigation fees Mitigation Fee Schedule: • **Condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Non-condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Weatherized Unit** $400 per unit *Date of Adoption – September 30, 2020* • **Mobile Home Unit** $400 per unit *October 1, 2018 – September 30, 2022*	Allowed to pay the mitigation fee in lieu of meeting NOx limit but with an increased mitigation fee and a **three year extension of the compliance dates** Mitigation Fee Schedule: • **Condensing Unit** $400 per unit *Date of Adoption – March 31, 2021* • **Non-condensing Unit** $400 per unit *Date of Adoption – September 30, 2021* • **Weatherized Unit** $400 per unit *Date of Adoption – September 30, 2022* • **Mobile Home Unit** $400 per unit *October 1, 2018 – September 30, 2024*	Allowed to pay a mitigation fee in lieu of meeting NOx limit but with **extended compliance dates and increased mitigation fees** Mitigation Fee Schedule: • **Condensing Unit $500 per unit** *Date of Adoption – September 30, 2019* • **Non-condensing Unit $500 per unit** *Date of Adoption – September 30, 2019* • **Weatherized Unit $500 per unit** *Date of Adoption – September 30, 2020* • **Mobile Home Unit $500 per unit** *October 1, 2018 – September 30, 2022*

Table 1-3
Comparison of Adverse Environmental Impacts of the Proposed Project and Alternatives

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent NOx Limit	ALTERNATIVE C Less Stringent Timing	ALTERNATIVE D More Mitigation
Air Quality (During Operation)	Expected to result in NOx emission reductions foregone of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031.	No new NOx emission reductions foregone. Existing compliance deadlines to achieve 14ng/J would remain intact.	Expected to result in lesser quantities of NOx emission reductions foregone over a shorter time frame than the proposed project.	Expected to result in equivalent NOx emission reductions foregone as the proposed project except that the recovery of the NOx emission reductions foregone will occur over a longer time frame than the proposed project.	Expected to result in equivalent NOx emission reductions foregone as the proposed project.
Significance of Air Quality Operational Impacts	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx due to the quantity of NOx emission reductions foregone.	Not significant: Does not exceed SCAQMD's regional air quality CEQA significance threshold for NOx. Compliance cannot be achieved by the original compliance schedule.	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx but at an amount that is less significant than the proposed project.	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx due to the quantity of NOx emission reductions foregone, but at an amount that is more significant than the proposed project and for a greater period of time than the proposed project.	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx due to the quantity of NOx emission reductions foregone at an amount that is equivalent to the proposed project. However, the additional mitigation fee will provide the SCAQMD with additional funding for the rebate program and additional projects to achieve additional NOx emission reductions throughout the Basin.

CHAPTER 2

PROJECT DESCRIPTION

Project Location

Project Background

Project Objective

Project Description

Summary of Affected Equipment

PROJECT LOCATION

PAR 1111 applies to manufacturers (NAICS 333), distributors and wholesalers (NAICS 423), retailers and dealers (NAICS 444), and installers of residential furnaces and requires manufacturers to certify that each furnace model offered for sale in the SCAQMD's jurisdiction complies with the NOx emission limit using specific test methods approved by the SCAQMD and U.S. EPA. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. A federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (see Figure 2-1).

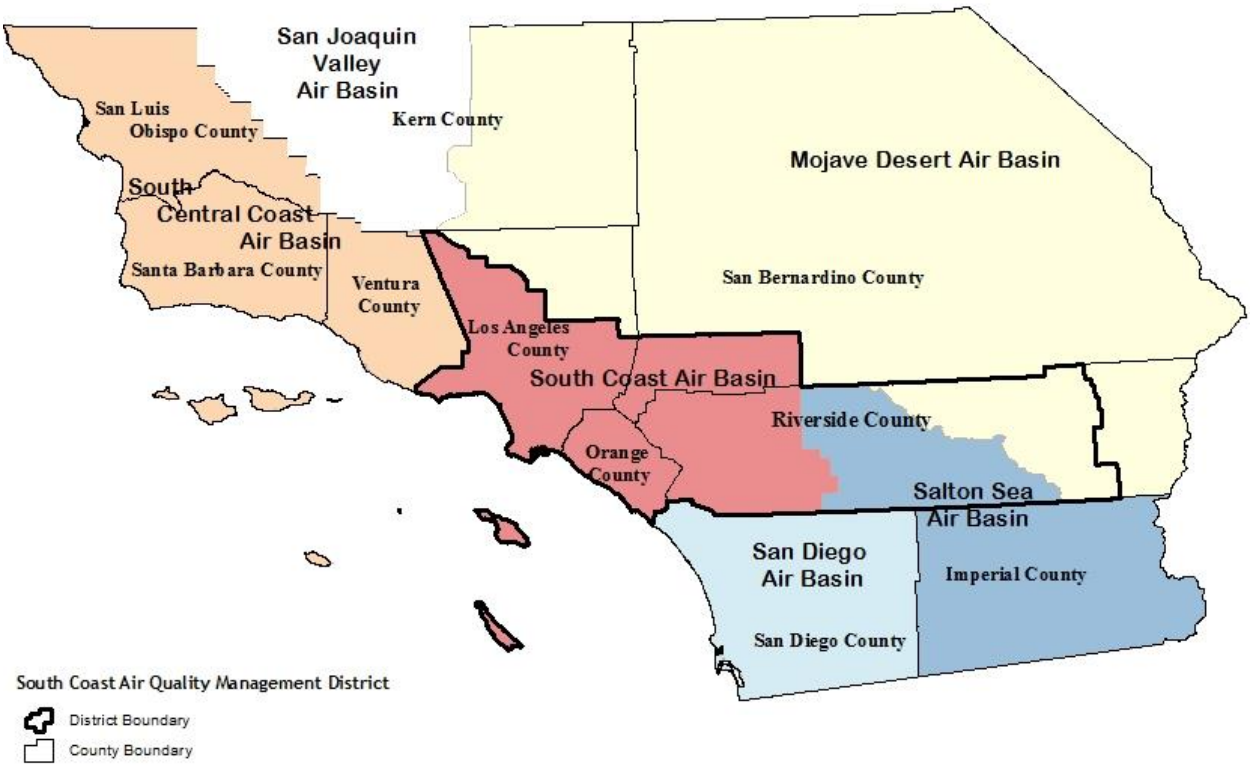

Figure 2-1
Southern California Air Basins

PROJECT BACKGROUND

Rule 1111 was adopted by the SCAQMD Governing Board on December 1978, to address space heating furnaces. The original rule required all residential and commercial space heating furnaces to meet a NOx emission limit of 40 nanograms per Joule (ng/J) of heat output (equivalent to 61 ppm at a reference level of 3 percent oxygen and 80 percent Annual Fuel Utilization Efficiency (AFUE)) beginning January 1, 1984. At the December 1978 rule adoption Hearing, a rule requirement that all space heating furnaces meet a 12 ng/J NOx emission limit by 1995 was considered by the Governing Board but not adopted.

Rule 1111 was first amended in July 1983 to limit applicability based on a unit's size and to exempt larger commercial space heaters. The rule amendment limited applicability to furnaces with a heat input of less than 175,000 BTU per hour or, for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour. The July 1983 amendment also exempted units manufactured for use in mobile homes (manufactured housing), revised the definition of efficiency, and clarified testing procedures.

In November 2009, Rule 1111 was amended to be consistent with the objectives of the 2007 Air Quality Management Plan (AQMP) Control Measure CMB-03. The 2009 amendment established a new lower NOx emission limit of 14 ng/J (equivalent to 22 ppm at a reference level of 3% oxygen and 80 percent AFUE), and required the three major categories of residential furnace – condensing (high efficiency), non-condensing (standard), and weatherized – to meet the new limit by October 1, 2014, October 1, 2015, and October 1, 2016, respectively. Furthermore, new mobile home heating units, which were unregulated prior to the 2009 amendment, had to meet a NOx limit of 40 ng/J in October 1, 2012, with a future limit of 14 ng/J in October 1, 2018. The new lower NOx emission limit of 14 ng/J reflects a 65 percent reduction from the then current limit of 40 ng/J. To facilitate the depletion of existing inventories and to ensure smooth transition to the new limits, Rule 1111 also provided a temporary 10-month exemption (a sell-through period) for units manufactured and delivered into the SCAQMD prior to the compliance date.

To encourage and accelerate technology development, the 2009 Rule 1111 amendment provided an incentive for early compliance with the 14 ng/Joule NOx emission limit, and a three million dollar fund was approved for this purpose. Manufacturers that delivered 14 ng/J furnaces into the SCAQMD prior to the applicable compliance date were given the opportunity to receive a payment of **$**75 for each standard efficiency furnace and **$**90 for each high-efficiency unit sold and delivered into the SCAQMD 90 days prior to the applicable compliance date. However, to date, no manufacturer has applied for this incentive.

The 2009 Rule 1111 amendment also required a technology assessment and status report to the Governing Board. This technology assessment evaluated both the feasibility of the new lower NOx emission limit and the rule implementation schedule. The SCAQMD Technology Advancement Office (TAO) initiated a Request for Proposals (RFP) to develop prototype residential furnaces that meet the new 14 ng/J NOx limit. The technology development projects were initiated in 2010 and completed in 2013. The total cost of the four projects was **$**1,447,737 with **$**447,737 provided by The Gas Company and **$**50,000 provided by the San Joaquin Valley Unified Air Pollution Control District. The prototype furnaces developed through these four projects demonstrated that the new lower Rule 1111 NOx limit is achievable in all of the types of forced air residential heating furnaces produced for the United States market. However, additional

time may be needed to commercialize 14 ng/J furnaces. This technology assessment was presented to the Governing Board meeting on January 10, 2014.

Rule 1111 was last amended in September 2014 to delay the compliance date for condensing furnaces and provide an alternative compliance option. The alternative compliance option allows manufacturers subject to Rule 1111 to pay a per-unit mitigation fee of $200 for each condensing furnace and $150 for each other type of furnace distributed or sold into the SCAQMD, in lieu of meeting the new lower NOx emission limit. The mitigation fee alternative compliance option can be used for up to 36 months past the applicable compliance date. Depending on furnace type, the mitigation fee option will end, and the NOx limit of 14 ng/J will phase in, over the period from April 1, 2018, to October 1, 2021. Industry endorsed the mitigation fee approach. The September 2014 amendment was approved into the State Implementation Plan (SIP) in March 2016 and the mitigation fee was set aside to be used to offset foregone NOx emissions reductions.

In April 2016, the Air Conditioning Heating and Refrigeration Institute (AHRI) and OEMs met with SCAQMD staff asserting that safety and reliability concerns had prevented the development of a compliant unit for commercialization. In response, staff conducted a survey with manufacturers from May to July 2016 and have been closely monitoring the technology development status. Furthermore, staff scheduled individual meetings with stakeholders (eight OEMs, two burner manufacturers, and other interested parties) in March, April, and May 2017. Task Force meetings were held on April 27, 2017, and May 25, 2017, in which implementation status and rule recommendations were discussed. These investigations found that compliant furnaces have not yet been introduced into the market; however, three OEMs have developed products complying with the Rule 1111 NOx 14 ng/J limit with field tests underway. Moreover, only one manufacturer has a compliant non-condensing product that is commercially available for the 2017 winter season. As a result, SCAQMD staff now proposes to amend Rule 1111 once again to further extend the compliance dates in the alternative compliance option for condensing furnaces, non-condensing furnaces, weatherized furnaces, and mobile home furnaces. In addition, PAR 1111 also proposes an increase to the mitigation fee and clarifies the applicability of the rule. A rebate program, separate from the rule amendment, is also proposed.

PROJECT OBJECTIVE

Because PAR 1111 was developed to address stakeholder feedback citing safety and reliability concerns that prevented the development of compliant units for widespread commercialization, the primary objective of PAR 1111 is to address the issues associated with the development and implementation of compliant technology while encouraging the development and sale of compliant products. Another objective of PAR 1111 is to ensure that OEMs have an incentive to proceed with capital investment necessary to commercialize compliant units.

PROJECT DESCRIPTION

SCAQMD staff is proposing to amend Rule 1111 to reflect recommendations made by stakeholders throughout the rule development process and to resolve technology development and implementation issues that have been raised by stakeholders. If adopted, PAR 1111 would further extend the dates for complying with the NOx limit established in Rule 1111 for the following equipment categories: 1) condensing furnaces from April 1, 2018, to October 1, 2019; 2) non-condensing Furnaces from October 1, 2018, to October 1, 2019; 3) weatherized furnaces from October 1, 2019, to October 1, 2020; and 4) mobile home furnaces from October 1, 2021, to

October 1, 2022. If the compliance dates are extended, PAR 1111 is expected to result in foregone NOx emissions reductions of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, all of which exceed the SCAQMD's regional air quality CEQA significance threshold. As such, analysis of PAR 1111 in the Draft SEA identified potentially significant adverse environmental impacts in the topic of air quality, specifically operational air quality, as an area that may be adversely affected by the proposed project. However, the emissions reductions foregone will eventually be achieved because existing furnaces will be eventually replaced and upgraded over time. In addition, the following changes are proposed in PAR 1111:

- Increase the mitigation fee to $400 for non-compliant units [see paragraph (c)(5) and Table 2 – Alternative Compliance plan mitigation fee schedule]; and

- Amend the definition of Fan-Type Central Furnace (paragraph (b)(4)) to prevent circumvention in regard to propane furnaces and to add applicability to any fan-type central furnace that is in natural gas-firing mode. Thus, a fan-type central furnace that has been configured to be liquid propane-fired, and is distributed or sold in the South Coast Basin with a natural gas conversion kit would be subject to PAR 1111 if conversion occurs.

A copy of PAR 1111 can be found in Appendix A of this Draft SEA. In addition, a rebate program is proposed to incentivize the purchase of the lower emitting compliant furnaces on a more cost-competitive level.

SUMMARY OF AFFECTED EQUIPMENT

SCAQMD staff believes that the industries that would be affected by and benefit from the delayed compliance requirements contained in PAR 1111 include manufacturers (NAICS 333), distributors and wholesalers (NAICS 423), and retailers and dealers (NAICS 444) of residential furnaces that are located within SCAQMD's jurisdiction. Construction and building contractors and installers (NAICS 238 and 811) will also be required to comply with PAR 1111, since compliant heating units are installed and utilized in residential and commercial settings for heating small buildings. The Air Conditioning Heating and Refrigeration Institute (AHRI), the major manufacturer's trade organization, indicates that there are no manufacturers of fan-type gas-fired residential furnaces within the SCAQMD's jurisdiction. However, these companies do maintain regional sales offices and distribution centers in the SCAQMD and there are manufacturers of other types of heating furnaces in the SCAQMD.

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CHAPTER 3

EXISTING SETTING

Introduction

Existing Setting

Air Quality

INTRODUCTION

In order to determine the significance of the impacts associated with a proposed project, it is necessary to evaluate the project's impacts against the backdrop of the environment as it exists at the time the environmental analysis is commenced. The CEQA Guidelines define "environment" as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." (CEQA Guidelines Section 15360; *see also* Public Resources Code Section 21060.5.) Furthermore, a CEQA document must include a description of the physical environment in the vicinity of the project, as it exists at the time the environmental analysis is commenced, from both a local and regional perspective. (CEQA Guidelines Section 15125.) Therefore, the "environment" or "existing setting" against which a project's impacts are compared consists of the immediate, contemporaneous physical conditions at and around the project site. (Remy, et al; 1996.)

The November 2009 amendments to Rule 1111 required new residential heating furnaces to meet lower NOx emission limits starting in 2012. The November 2009 Final EA, concluded that the project would not have a significant effect on the environment for all 17 of the environmental topic areas analyzed. The analysis in the November 2009 Final EA concluded that the operational air quality impacts were expected to permanently reduce NOx emissions (an environmental benefit) from the affected source category by less than 0.1 ton per day by 2014 and 3.1 tons per day by 2023. The November 2009 Final EA can be obtained by visiting the following website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2009/final-environmental-assessment-for-proposed-amended-rule-1111.pdf.

The September 2014 amendments to Rule 1111 provided manufacturers additional time to produce residential furnaces that meet the NOx emission limit of 14 ng/J. The September 2014 Final EA also concluded that the project would not have a significant effect on the environment for all 17 of the environmental topic areas analyzed. The September 2014 Final EA concluded that the operational air quality impacts would result in a delay in emission reductions of up to 46 pounds per day during the period from October 1, 2014, until April 1, 2015, which is below the SCAQMD Mass Daily Air Quality Significance Thresholds for operational NOx emissions (55 lbs/day). The September 2014 Final EA can be obtained by visiting the following website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2014/par_1111_fea_wapps.pdf.

The following section summarizes the existing setting for operational air quality which was the only environmental topic identified that may be adversely affected by the proposed project. The Final Program EIR for the 2016 AQMP also contains comprehensive information on existing and projected environmental settings for the topic of air quality. The Final Program EIR for the 2016 AQMP can be obtained by visiting the following website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf.

Hard copies of the above referenced documents are also available by visiting the SCAQMD's Public Information Center at SCAQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765; by contacting Fabian Wesson, Public Advisor by calling (909) 396-2039 or by emailing at PICrequests@aqmd.gov.

EXISTING SETTING

Rule 1111 is applicable to the following equipment categories of residential and commercial fan-type central furnaces: 1) condensing furnaces; 2) non-condensing furnaces; 3) weatherized furnaces; and 4) mobile home furnaces. Specifically, Rule 1111 controls NOx emissions from residential and commercial fan-type central furnaces with a rated heat input capacity of less than 175,000 BTU per hour or, for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour. Under Rule 1111, regulated equipment must meet a NOx emission limit of 14 ng/J by the compliance dates set forth in Table 1 of the rule.

Baseline Emission Inventory

Existing Rule 1111 applies to manufacturers (NAICS 333), distributors and wholesalers (NAICS 423), and retailers and dealers (NAICS 444) of residential furnaces that are located within SCAQMD's jurisdiction. The equipment subject to Rule 1111 is used in residential and commercial settings for heating small buildings. PAR 1111 will also apply to the same manufacturers, distributors and wholesalers, and retailers and dealers already subject to Rule 1111. The baseline emission inventory for equipment subject to Rule 1111, as summarized in Table 3-1, was estimated to be 9.51 tons per day of NOx (from 2012 actual natural gas consumption data – Table III-1-6 2012 Annual Average Emissions Associated with Natural Gas Combustion in TPD in the 2016 AQMP).

Table 3-1
NOx Baseline Emission Inventory for Rule 1111 Equipment from September 2014 Rule Amendments

Rule 1111 NOx Emission Limit as of September 2014	NOx Baseline Emission Inventory (tons/day)
• 14 ng/J by October 1, 2018 for Mobile Home • 14 ng/J for Condensing, Non-Condensing, and Weatherized	9.51

AIR QUALITY

It is the responsibility of SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, CO, NO2, PM10, PM2.5, SO2, and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM10 and SO2, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-2. SCAQMD monitors levels of various criteria pollutants at 38 monitoring stations. The 2016 air quality data (the latest data available) from SCAQMD's monitoring stations are presented in Table 3-3.

Table 3-2
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m3)	0.12 ppm	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage.
	8-hour	0.070 ppm (137 µg/m3)	0.070 ppm (137 µg/m3)	
Suspended Particulate Matter (PM10)	24-hour	50 µg/m3	150 µg/m3	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children.
	Annual Arithmetic Mean	20 µg/m3	No Federal Standard	
Suspended Particulate Matter (PM2.5)	24-hour	No State Standard	35 µg/m3	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung functions and premature death.
	Annual Arithmetic Mean	12 µg/m3	12.0 µg/m3	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m3)	35 ppm (40 mg/m3)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
	8-Hour	9 ppm (10 mg/m3)	9 ppm (10 mg/m3)	

Table 3-2 (Concluded)

State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Nitrogen Dioxide (NO2)	1-Hour	0.18 ppm (339 µg/m3)	0.100 ppm (188 µg/m3)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	0.053 ppm (100 µg/m3)	
Sulfur Dioxide (SO2)	1-Hour	0.25 ppm (655 µg/m3)	75 ppb (196 µg/m3)–	Broncho-constriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24-Hour	0.04 ppm (105 µg/m3)	No Federal Standard	
Sulfates	24-Hour	25 µg/m3	No Federal Standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage
Hydrogen Sulfide (H2S)	1-Hour	0.03 ppm (42 µg/m3)	No Federal Standard	Odor annoyance.
Lead (Pb)	30-Day Average	1.5 µg/m3	No Federal Standard	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction.
	Calendar Quarter	No State Standard	1.5 µg/m3	
	Rolling 3-Month Average	No State Standard	0.15 µg/m3	
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent.	No Federal Standard	The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility based standard not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m3)	No Federal Standard	Highly toxic and a known carcinogen that causes a rare cancer of the liver.

a. The California ambient air quality standards for O3, CO, SO2 (1-hour and 24-hour), NO2, PM10, and PM2.5 are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

b. The national ambient air quality standards, other than O3 and those based on annual averages are not to be exceeded more than once a year. The O3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

ppb = parts per billion parts of air, by volume ppm = parts per million parts of air, by volume µg/m3 = micrograms per cubic meter mg/ m3 = milligrams per cubic meter

Table 3-3

2016 Air Quality Data – South Coast Air Quality Management District

CARBON MONOXIDE (CO)[a]				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hour	Max. Conc. in ppm, 8-hour
LOS ANGELES COUNTY				
1	Central Los Angeles	361	1.9	1.4
2	Northwest Coastal Los Angeles County	366	2.2	1.1
3	Southwest Coastal Los Angeles County	362	1.6	1.3
4	South Coastal Los Angeles County 1	--	--	--
4	South Coastal Los Angeles County 2	--	--	--
4	South Coastal Los Angeles County 3	363	3.3	2.2
4	I-710 Near Road##	--	--	--
6	West San Fernando Valley	366	2.4	1.9
8	West San Gabriel Valley	366	1.5	1
9	East San Gabriel Valley 1	366	1.3	1.2
9	East San Gabriel Valley 2	364	1.1	1
10	Pomona/Walnut Valley	361	1.7	1.3
11	South San Gabriel Valley	366	2.8	1.7
12	South Central Los Angeles County	366	4.4	3.9
13	Santa Clarita Valley	366	1.3	1.1
ORANGE COUNTY				
16	North Orange County	366	3.1	1.5
17	Central Orange County	355	2.6	2.1
17	I-5 Near Road##	360	3.7	2.2
18	North Coastal Orange County	366	2.1	1.7
19	Saddleback Valley	353	1.3	0.7
RIVERSIDE COUNTY				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	359	1.7	1.3
23	Metropolitan Riverside County 3	366	1.9	1.4
24	Perris Valley	--	--	--
25	Elsinore Valley	298*	1.2	0.6
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1**	361	3.1	1.5
30	Coachella Valley 2**	--	--	--
30	Coachella Valley 3**	--	--	--
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	366	1.7	1.3
33	I-10 Near Road##	366	1.7	1.3
33	CA-60 Near Road##	--	--	--
34	Central San Bernardino Valley 1	359	1.7	1
34	Central San Bernardino Valley 2	358	2.2	1.7
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
DISTRICT MAXIMUM			4.4	3.9
SOUTH COAST AIR BASIN			4.4	3.9

ppm = parts per million -- = Pollutant not monitored ** Salton Sea Air Basin
*Incomplete Data

[a] The federal 8-hour standard (8-hour average CO > 9 ppm) and state 8-hour standard (8-hour average CO > 9.0 ppm) were not exceeded. The federal and state 1-hour standards (35 ppm and 20 ppm) were not exceeded either.

Table 3-3 (Continued)

2016 Air Quality Data – South Coast Air Quality Management District

OZONE (O3)										
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hr	Max. Conc. in ppm 8-hr	4th High Conc. ppm 8-hr	No. Days Standard Exceeded				
						Federal			State	
						Old > 0.124 ppm 1-hr	Current >0.070 ppm 8-hr*	2008 > 0.075 ppm 8-hr	Current > 0.09 ppm 1-hr	Current > 0.070 ppm 8-hr
LOS ANGELES COUNTY										
1	Central LA	364	0.103	0.078	0.071	0	4	1	2	4
2	Northwest Coastal LA County	365	0.085	0.073	0.066	0	2	0	0	2
3	Southwest Coastal LA County	361	0.087	0.08	0.067	0	2	1	0	3
4	South Coastal LA County 1	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 2	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 3	365	0.079	0.059	0.055	0	0	0	0	0
4	I-710 Near Road##	--	--	--	--	--	--	--	--	--
6	West San Fernando Valley	364	0.122	0.098	0.086	0	23	14	9	23
8	West San Gabriel Valley	358	0.126	0.09	0.082	1	18	15	12	19
9	East San Gabriel Valley 1	366	0.146	0.106	0.095	4	39	25	30	40
9	East San Gabriel Valley 2	362	0.148	0.114	0.098	6	52	31	38	55
10	Pomona/Walnut Valley	360	0.127	0.092	0.087	1	26	14	20	29
11	South San Gabriel Valley	359	0.111	0.081	0.074	0	6	2	9	6
12	South Central LA County	365	0.098	0.071	0.064	0	1	0	1	1
13	Santa Clarita Valley	366	0.13	0.115	0.1	2	57	35	29	59
ORANGE COUNTY										
16	North Orange County	365	0.103	0.078	0.075	0	6	3	3	7
17	Central Orange County	354	0.103	0.074	0.071	0	4	0	2	4
17	I-5 Near Road##	--	--	--	--	--	--	--	--	--
18	North Coastal Orange County	366	0.09	0.069	0.065	0	0	0	0	0
19	Saddleback Valley	365	0.122	0.093	0.079	0	13	6	5	13
RIVERSIDE COUNTY										
22	Corona/Norco Area	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	357	0.142	0.104	0.097	1	69	47	33	71
23	Metropolitan Riverside County 3	365	0.14	0.106	0.095	1	65	43	34	70
24	Perris Valley	366	0.131	0.098	0.092	1	55	30	23	56
25	Elsinore Valley	360	0.124	0.093	0.087	0	44	25	15	45
26	Temecula Valley	355	0.092	0.081	0.077	0	19	6	0	20
29	San Gorgonio Pass	358	0.128	0.106	0.094	1	52	39	26	54
30	Coachella Valley 1**	363	0.103	0.092	0.087	0	46	20	6	48
30	Coachella Valley 2**	331	0.099	0.089	0.081	0	27	12	3	29
30	Coachella Valley 3**	--	--	--	--	--	--	--	--	--
SAN BERNARDINO COUNTY										
32	Northwest San Bernardino Valley	366	0.156	0.116	0.11	10	88	65	53	89
33	I-10 Near Road##	--	--	--	--	--	--	--	--	--
33	CA-60 Near Road##	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	362	0.139	0.105	0.098	3	49	39	34	52
34	Central San Bernardino Valley 2	366	0.158	0.118	0.114	10	106	76	70	108
35	East San Bernardino Valley	364	0.145	0.119	0.103	3	97	71	55	100
37	Central San Bernardino Mountains	365	0.163	0.121	0.116	9	101	80	64	103
38	East San Bernardino Mountains	--	--	--	--	--	--	--	--	--
DISTRICT MAXIMUM			0.163	0.121	0.116	10	106	80	70	108
SOUTH COAST AIR BASIN			0.163	0.121	0.116	17	132	103	83	132

ppm = parts per million -- = Pollutant not monitored ** Salton Sea Air Basin

* Incomplete data

Table 3-3 (Continued)

2016 Air Quality Data – South Coast Air Quality Management District

NITROGEN DIOXIDE (NO2)[b]					
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	1-hour Max. Conc. ppb, 1,	1-hour 98th Percentile Conc. ppb,	Annual Average AAM Conc. ppb
LOS ANGELES COUNTY					
1	Central LA	366	64.7	61	20.8
2	Northwest Coastal LA County	366	54.5	49.3	11.6
3	Southwest Coastal LA County	348	81.5	54.7	10.1
4	South Coastal LA County 1	--	--	--	--
4	South Coastal LA County 2	--	--	--	--
4	South Coastal LA County 3	366	75.6	66.3	18.5
4	I-710 Near Road##	366	95.3	76.6	23.9
6	West San Fernando Valley	355	55.5	45.9	12.9
8	West San Gabriel Valley	366	71.9	58.4	15.4
9	East San Gabriel Valley 1	366	74.2	58.3	16.6
9	East San Gabriel Valley 2	365	65.4	45.7	11.6
10	Pomona/Walnut Valley	360	69.3	62.5	20.1
11	South San Gabriel Valley	361	63.2	60.1	20
12	South Central LA County	366	63.7	58.4	15.6
13	Santa Clarita Valley	361	46.4	39.4	10.2
ORANGE COUNTY					
16	North Orange County	359	60.4	51.5	14.7
17	Central Orange County	354	64.3	56.7	14.8
17	I-5 Near Road##	357	75.2	60.1	23.4
18	North Coastal Orange County	349	59.8	51.2	10.1
19	Saddleback Valley	--	--	--	--
RIVERSIDE COUNTY					
22	Corona/Norco Area	--	--	--	--
23	Metropolitan Riverside County 1	366	73.1	52.2	14.9
23	Metropolitan Riverside County 3	366	64.9	48.3	13.6
24	Perris Valley	--	--	--	--
25	Elsinore Valley	345*	51.3	35.6	8.1
26	Temecula Valley	--	--	--	--
29	San Gorgonio Pass	348	46.9	42.6	7.9
30	Coachella Valley 1**	363	42.6	34.4	6
30	Coachella Valley 2**	--	--	--	--
30	Coachella Valley 3**	--	--	--	--
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	366	70.1	55.1	16.5
33	I-10 Near Road##	362	93.4	74.3	29.3
33	CA-60 Near Road##	361	89.8	71.3	31
34	Central San Bernardino Valley 1	357	71.7	56.4	18.2
34	Central San Bernardino Valley 2	355	60.1	51.4	16.6
35	East San Bernardino Valley	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM			95.3	76.6	31
SOUTH COAST AIR BASIN			95.3	76.6	31

ppb = parts per billion AAM = Annual Arithmetic Mean -- = Pollutant not monitored ** Salton Sea Air Basin

[b] The NO2 federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO2 > 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

Table 3-3 (Continued)

2016 Air Quality Data – South Coast Air Quality Management District

SULFUR DIOXIDE (SO2)[c]				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Maximum Conc. ppb, 1-hour	99th Percentile Conc. ppb, 1-hour
LOS ANGELES COUNTY				
1	Central LA	366	13.4	2.5
2	Northwest Coastal LA County	--	--	--
3	Southwest Coastal LA County	363	9.7	5.7
4	South Coastal LA County 1	--	--	--
4	South Coastal LA County 2	--	--	--
4	South Coastal LA County 3	366	17.8	12
4	I-710 Near Road##	--	--	--
6	West San Fernando Valley	--	--	--
8	West San Gabriel Valley	--	--	--
9	East San Gabriel Valley 1	--	--	--
9	East San Gabriel Valley 2	--	--	--
10	Pomona/Walnut Valley	--	--	--
11	South San Gabriel Valley	--	--	--
12	South Central LA County	--	--	--
13	Santa Clarita Valley	--	--	--
ORANGE COUNTY				
16	North Orange County	--	--	--
17	Central Orange County	--	--	--
17	I-5 Near Road##	--	--	--
18	North Coastal Orange County	366	3.3	2.1
19	Saddleback Valley	--	--	--
RIVERSIDE COUNTY				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	366	5.6	2
23	Metropolitan Riverside County 3	--	--	--
24	Perris Valley	--	--	--
25	Elsinore Valley	--	--	--
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1**	--	--	--
30	Coachella Valley 2**	--	--	--
30	Coachella Valley 3**	--	--	--
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	--	--	--
33	I-10 Near Road##	--	--	--
33	CA-60 Near Road##	--	--	--
34	Central San Bernardino Valley 1	363	6.3	2
34	Central San Bernardino Valley 2	--	--	--
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
DISTRICT MAXIMUM			17.8	12
SOUTH COAST AIR BASIN			17.8	12

ppb = parts per billion -- = Pollutant not monitored ** Salton Sea Air Basin

[c] The federal SO2 1-hour standard is 75 ppb (0.075 ppm). The state standards are 1-hour average SO2 > 0.25 ppm (250 ppb) and 24-hour average SO2 > 0.04 ppm (40 ppb).

Table 3-3 (Continued)
2016 Air Quality Data – South Coast Air Quality Management District

SUSPENDED PARTICULATE MATTER PM10[d]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m^3, 24-hour	No. (%) Samples Exceeding Standard		Annual Average AAM Conc.[e] µg/m^3
				Federal > 150 µg/m^3, 24-hour	State > 50 µg/m^3, 24-hour	
LOS ANGELES COUNTY						
1	Central LA	277*	67	0	18(6%)	32.4
2	Northwest Coastal LA County	--	--	--	--	--
3	Southwest Coastal LA County	60	43	0	0(0%)	21.6
4	South Coastal LA County 1	--	--	--	--	--
4	South Coastal LA County 2	60	56	0	3(5%)	27.8
4	South Coastal LA County 3	59	75	0	8(14%)	31.9
4	I-710 Near Road##	--	--	--	--	--
6	West San Fernando Valley	--	--	--	--	--
8	West San Gabriel Valley	--	--	--	--	--
9	East San Gabriel Valley 1	60	74	0	12(20%)	33.7
9	East San Gabriel Valley 2	362	74	0	21(6%)	29.8
10	Pomona/Walnut Valley	----	----	--	--	--
11	South San Gabriel Valley	--	--	--	--	--
12	South Central LA County	--	--	--	--	--
13	Santa Clarita Valley	60	96	0	1(2%)	23.4
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	353	74	0	3(1%)	24.4
17	I-5 Near Road##	--	--	--	--	--
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	59	59	0	1(2%)	21
RIVERSIDE COUNTY						
22	Corona/Norco Area	51*	62	0	7(14%)	31.7
23	Metropolitan Riverside County 1	302*	82	0	58(19%)	36.9
23	Metropolitan Riverside County 3	356+	116	0	175(49%)	49
24	Perris Valley	57	76	0	5(9%)	32.2
25	Elsinore Valley	366	99	0	4(1%)	21.4
26	Temecula Valley	--	--	--	--	--
29	San Gorgonio Pass	57	65	0	3(5%)	24
30	Coachella Valley 1**	355+	113	0	6(2%)	20.8
30	Coachella Valley 2**	313*+	137	0	56(18%)	36.9
30	Coachella Valley 3**	272*+	150	0	76(28%)	43
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	363	72	0	5(1%)	25
33	I-10 Near Road##	--	--	--	--	--
33	CA-60 Near Road##	--	--	--	--	--
34	Central San Bernardino Valley 1	61	94	0	15(25%)	38.1
34	Central San Bernardino Valley 2	333*	91	0	33(10%)	33.1
35	East San Bernardino Valley	56	72	0	4(7%)	27.8
37	Central San Bernardino Mountains	61	46	0	0(0%)	17.1
38	East San Bernardino Mountains	--	--	--	--	--
DISTRICT MAXIMUM			150+	0+	175+	49.0+
SOUTH COAST AIR BASIN			116+	0+	181+	49.0+

µg/m^3 = micrograms per cubic meter of air | AAM = Annual Arithmetic Mean | -- = Pollutant not monitored | ** Salton Sea Air Basin

* Incomplete Data

\+ = High FRM and FEM PM10 data samples recorded at locations in Coachella Valley and the Basin are excluded due to the high wind in accordance with the U.S. EPA Exceptional Event Regulation.

d - Federal Reference Method (FRM) PM10 samples were collected every 6 days at all sites except for Stations 4144 and 4157, where samples were collected every 3 days. PM10 statistics listed above are for the FRM data only. Federal Equivalent Method (FEM) PM10 continuous monitoring instruments were operated at some of the above locations. Max 24-hour average PM10 at sites with FEM monitoring was 152 µg/m3, at Indio.

e - State standard is annual average (AAM) > 20 µg/m3. Federal annual PM10 standard (AAM > 50 µg/m3) was revoked in 2006.

Table 3-3 (Continued)

2016 Air Quality Data – South Coast Air Quality Management District

SUSPENDED PARTICULATE MATTER PM2.5 [f]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m^3, 24-hour	98th Percentile Conc. in µg/m^3 24-hr	No. (%) Samples Exceeding Federal Std > 35 µg/m^3, 24-hour	Annual Average AAM Conc.[g] µg/m^3
LOS ANGELES COUNTY						
1	Central LA	357	44.39	27.3	2(0.6%)	11.83
2	Northwest Coastal LA County	--	--	--	--	--
3	Southwest Coastal LA County	--	--	--	--	--
4	South Coastal LA County 1	356	29.37	23.56	0	10.36
4	South Coastal LA County 2	350	28.93	22.05	0	9.62
4	South Coastal LA County 3	--	--	--	--	--
4	I-710 Near Road##	352	33.31	26.09	0	12.03
6	West San Fernando Valley	113	30.05	24.59	0	9.23
8	West San Gabriel Valley	119	29.21	25.38	0	9.59
9	East San Gabriel Valley 1	122	32.17	29.01	0	10.15
9	East San Gabriel Valley 2	--	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	120	46.59	25.13	2(1.7%)	11.75
12	South Central LA County	115	36.35	26.35	1(0.9%)	11.13
13	Santa Clarita Valley	--	--	--	--	--
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	349	44.45	24.02	1(0.3%)	9.47
17	I-5 Near Road##	--	--	--	--	--
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	117	24.79	13.41	0	7.36
RIVERSIDE COUNTY						
22	Corona/Norco Area	--	--	--	--	--
23	Metropolitan Riverside County 1	357+	39.12	31.65	4(1.1%)	12.54
23	Metropolitan Riverside County 3	352+	45.64	35.14	6(1.7%)	14.02
24	Perris Valley	--	--	--	--	--
25	Elsinore Valley	--	--	--	--	--
26	Temecula Valley	--	--	--	--	--
29	San Gorgonio Pass	--	--	--	--	--
30	Coachella Valley 1**	112	14.71	12.43	0	5.53
30	Coachella Valley 2**	115	25.84	15.04	0	7.74
30	Coachella Valley 3**	--	--	--	--	--
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	--	--	--	--	--
33	I-10 Near Road##	--	--	--	--	--
33	CA-60 Near Road##	347*+	44.14	33.02	6(1.7%)	14.73
34	Central San Bernardino Valley 1	111+	30.45	26.25	0	12.04
34	Central San Bernardino Valley 2	113+	32.54	27.12	0	10.84
35	East San Bernardino Valley	--	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--	--
38	East San Bernardino Mountains	55	28.42	22.14	0	6.83
DISTRICT MAXIMUM			46.6+	35.1+	6+	14.73+
SOUTH COAST AIR BASIN			46.6+	35.1+	9+	14.73+

µg/m^3 = micrograms per cubic meter of air AAM = Annual Arithmetic Mean -- = Pollutant not monitored ** Salton Sea Air Basin

[f] PM2.5 samples were collected every 3 days at all sites except for station numbers 072, 077, 087, 3176, 4144 and 4165, where samples were taken daily, and station number 5818 where samples were taken every 6 days. PM2.5 statistics listed above are for the FRM data only. FEM PM2.5 continuous monitoring instruments were operated at some of the above locations for special purposes studies. .

[g] Both federal and state standards are annual average (AAM) > 12.0 µg/m^3.

Table 3-3 (Concluded)

2016 Air Quality Data – South Coast Air Quality Management District

Source Receptor Area No.	Location of Air Monitoring Station	LEAD[h] Max. Monthly Average Conc. [m] µg/m³	LEAD[h] Max. 3-Month Rolling Average [m] µg/m³	SULFATES (SOx)[i] No. Days of Data	SULFATES (SOx)[i] Max. Conc. µg/m³, 24-hour
LOS ANGELES COUNTY					
1	Central LA	0.016	0.01	58	5.8
2	Northwest Coastal LA County	--	--	--	--
3	Southwest Coastal LA County	0.006	0.01	58	6.2
4	South Coastal LA County 1	--	--	--	--
4	South Coastal LA County 2	0.008	0.01	59	6.3
4	South Coastal LA County 3	--	--	57	7.4
4	I-710 Near Road##	--	--	--	--
6	West San Fernando Valley	--	--	--	--
8	West San Gabriel Valley	--	--	--	--
9	East San Gabriel Valley 1	--	--	58	9.5#
9	East San Gabriel Valley 2	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--
11	South San Gabriel Valley	0.011	0.01	--	--
12	South Central LA County	0.016	0.01	--	--
13	Santa Clarita Valley	--	--	59	4.1
ORANGE COUNTY					
16	North Orange County	--	--	--	--
17	Central Orange County	--	--	59	5.3#
17	I-5 Near Road##	--	--	--	--
18	North Coastal Orange County	--	--	--	--
19	Saddleback Valley	--	--	58	3.7
RIVERSIDE COUNTY					
22	Corona/Norco Area	--	--	50	8.2#
23	Metropolitan Riverside County 1	0.007	0.01	114	15.2#
23	Metropolitan Riverside County 3	--	--	118	13.6#
24	Perris Valley	--	--	55	6.0#
25	Elsinore Valley	--	--	--	--
26	Temecula Valley	--	--	--	--
29	San Gorgonio Pass	--	--	56	4.0#
30	Coachella Valley 1**	--	--	51	3.9
30	Coachella Valley 2**	--	--	113	4.1
30	Coachella Valley 3**	--	--	--	--
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	0.007	0.01	--	--
33	I-10 Near Road##	--	--	--	--
33	CA-60 Near Road##	--	--	--	--
34	Central San Bernardino Valley 1	--	--	59	17.1#
34	Central San Bernardino Valley 2	0.01	0.01	55	16.0#
35	East San Bernardino Valley	--	--	56	12.1#
37	Central San Bernardino Mountains	--	--	59	3.9#
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM		0.016++	0.01++		17.1#
SOUTH COAST AIR BASIN		0.016++	0.01++		17.1#

µg/m³ = micrograms per cubic meter of air -- = Pollutant not monitored ** Salton Sea Air Basin

h Federal lead standard is 3-months rolling average > 0.15 µg/m³; state standard is monthly average ≥ 1.5 µg/m³. .Lead standards were not exceeded.

i Sulfate data is not available at this time. State sulfate standard is 24-hour □ 25 µg/m3. There is no federal standard for sulfate.

Carbon Monoxide

CO is a primary pollutant, meaning that it is directly emitted into the air, not formed in the atmosphere by chemical reaction of precursors, as is the case with ozone and other secondary pollutants. Ambient concentrations of CO in the Basin exhibit large spatial and temporal variations due to variations in the rate at which CO is emitted and in the meteorological conditions that govern transport and dilution. Unlike ozone, CO tends to reach high concentrations in the fall and winter months. The highest concentrations frequently occur on weekdays at times consistent with rush hour traffic and late night during the coolest, most stable portion of the day.

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise and electrocardiograph changes indicative of worsening oxygen supply to the heart.

Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes.

Reductions in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include preterm births and heart abnormalities.

CO concentrations were measured at 25 locations in the Basin and neighboring Salton Sea Air Basin areas in 2016. CO concentrations did not exceed the standards in 2016. The highest 1-hour average CO concentration recorded (4.4 ppm in the South Central Los Angeles County area) was 13 percent of the federal 1-hour CO standard of 35 ppm and 22 percent of the state 1-hour standard of 20 ppm. The highest 8-hour average CO concentration recorded (3.9 ppm in the South Central Los Angeles County area) was 43 percent of the federal and state 8-hour CO standard of 9.0 ppm.

In 2004, SCAQMD formally requested the U.S. EPA to re-designate the Basin from nonattainment to attainment with the CO NAAQS. On February 24, 2007, U.S. EPA published in the Federal Register its proposed decision to re-designate the Basin from nonattainment to attainment for CO. The comment period on the re-designation proposal closed on March 16, 2007 with no comments received by the U.S. EPA. On May 11, 2007, U.S. EPA published in the Federal Register its final decision to approve SCAQMD's request for re-designation from non-attainment to attainment for CO, effective June 11, 2007.

On August 12, 2011 U.S. EPA issued a decision to retain the existing NAAQS for CO, determining that those standards provided the required level of public health protection. However, U.S. EPA added a monitoring requirement for near-road CO monitors in urban areas with population of one million or more, utilizing stations that would be implemented to meet the 2010 NO2 near-road monitoring requirements. The two new CO monitors are at the I-5 near-road site, located in Orange

County near Anaheim, and the I-10 near-road site, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

Ozone

Ozone (O3), a colorless gas with a sharp odor, is a highly reactive form of oxygen. High ozone concentrations exist naturally in the stratosphere. Some mixing of stratospheric ozone downward through the troposphere to the earth's surface does occur; however, the extent of ozone transport is limited. At the earth's surface in sites remote from urban areas ozone concentrations are normally very low (e.g., from 0.03 ppm to 0.05 ppm).

The propensity of ozone for reacting with organic materials causes it to be damaging to living cells and ambient ozone concentrations in the Basin are frequently sufficient to cause health effects. Ozone enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection.

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities. Elevated ozone levels are also associated with increased school absences.

Ozone exposure under exercising conditions is known to increase the severity of the above mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants which include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

In 2016, SCAQMD regularly monitored ozone concentrations at 29 locations in the Basin and the Coachella Valley portion of the Salton Sea Air Basin. Maximum ozone concentrations (fourth highest concentration ppm 8-hour) for all areas monitored were below the stage 1 episode level (0.20 ppm) and below the health advisory level (0.15 ppm) (see Table 3-3). All counties in the Basin, as well as the Coachella Valley, exceeded the level of the new 2015 (0.070 ppm), the former 2008 (0.075 ppm), and/or the 1997 (0.08 ppm) 8-hour ozone NAAQS in 2016. While not all stations had days exceeding the previous 8-hour standards, all monitoring stations except two (South Coastal LA County 3 and North Coastal Orange County) had at least one day over the 2015 federal ozone standard (70 ppb).

In 2016, the maximum ozone concentrations in the Basin continued to exceed federal standards by wide margins. Maximum 1-hour and 8-hour average ozone concentrations were 0.163 ppm and

0.121 ppm, respectively (the maximum 1-hour and 8-hour average was recorded in the Central San Bernardino Mountain area). The maximum 8-hour concentration of 0.121 ppm was 173 percent of the new federal standard (0.070 ppm). The maximum 1-hour concentration was 181 percent of the 1-hour state ozone standard of 0.09 ppm. The 8-hour average concentration was 173 percent of the 8-hour state ozone standard of 0.070 ppm.

Nitrogen Dioxide

NO2 is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from the nitrogen (N2) and oxygen (O2) in air under conditions of high temperature and pressure which are generally present during combustion of fuels; NO reacts rapidly with the oxygen in air to form NO2. NO2 is responsible for the brownish tinge of polluted air. The two gases, NO and NO2, are referred to collectively as NOx. In the presence of sunlight, NO2 reacts to form nitric oxide and an oxygen atom. The oxygen atom can react further to form ozone, via a complex series of chemical reactions involving hydrocarbons. Nitrogen dioxide may also react to form nitric acid (HNO3) which reacts further to form nitrates, components of PM2.5 and PM10.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups. More recent studies have found associations between NO2 exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.

In 2016, nitrogen dioxide concentrations were monitored at 27 locations. No area of the Basin or Salton Sea Air Basin exceeded the federal or state standards for NO2. The Basin has not exceeded the federal standard for NO2 (0.0534 ppm) since 1991, when the Los Angeles County portion of the Basin recorded the last exceedance of the standard in any county within the United States. The current 1-hour average NO2 NAAQS (100 ppb) was last exceeded on two days in 2014 in the South Coastal Los Angeles County area at the Long Beach-Hudson air monitoring station. However, the 98th percentile form of the standard was not exceeded, and the 2013-2015 design value is not in violation of the NAAQS. The higher relative concentrations in the Los Angeles area are indicative of the concentrated emission sources, especially heavy-duty vehicles. NOx emission reductions continue to be necessary because it is a precursor to both ozone and PM (PM2.5 and PM10) concentrations.

With the revised NO2 federal standard in 2010, near-road NO2 measurements were required to be phased in for larger cities. The four near-road monitoring stations are: (1) I-5 near-road, located

in Orange County near Anaheim; (2) I-710 near-road, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; (3) SR-60 near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland; and (4) I-10 near-road, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

The longest operating near-road station in the Basin, adjacent to I-5 in Orange County, has not exceeded the level of the 1-hour NO2 NAAQS (100 ppb) since the measurements began on January 1, 2014. The peak 1-hour NO2 concentration at that site in 2014 was 78.8 ppb and the peak concentration for 2015 was 70.2 ppb. This can be compared to the annual peak values measured at the nearest ambient monitoring station in Central Orange County (Anaheim station), where the 2014 and 2015 peaks were 75.8 and 59.1, respectively.

Sulfur Dioxide

SO2 is a colorless gas with a sharp odor. It reacts in the air to form sulfuric acid (H2SO4), which contributes to acid precipitation, and sulfates, which are components of PM10 and PM2.5. Most of the SO2 emitted into the atmosphere is produced by burning sulfur-containing fuels.

Exposure of a few minutes to low levels of SO2 can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO2. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, is observed after acute higher exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2.

Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

No exceedances of federal or state standards for sulfur dioxide occurred in 2016 at any of the six locations monitored the Basin. The maximum 1-hour SO2 concentration was 17.8 ppb, as recorded in the South Coastal Los Angeles County area. The 99th percentile of 1-hour SO2 concentration was 12 ppb, as recorded in South Coastal Los Angeles County area. Though SO2 concentrations remain well below the standards, SO2 is a precursor to sulfate, which is a component of fine particulate matter, PM10, and PM2.5. Historical measurements showed concentrations to be well below standards and monitoring has been discontinued.

Particulate Matter (PM10 and PM2.5)

Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter (PM10)) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM10 and PM2.5.

A consistent correlation between elevated ambient fine particulate matter (PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by PM2.5 and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children, and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to particulate matter. In addition to children, the elderly and people with preexisting respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM10 and PM2.5.

SCAQMD monitored PM10 concentrations at 23 locations in 2016. The federal 24-hour PM10 standard (150 µg/m3) was not exceeded in 2016. The Basin has remained in attainment of the PM10 NAAQS since 2006. The maximum three-year average 24-hour PM10 concentration of 150 µg/m3 was recorded in the Coachella Valley area and was 100 percent of the federal standard and 300 percent of the much more stringent state 24-hour PM10 standard (50 µg/m3). The state 24-hour PM10 standard was exceeded at several of the monitoring stations. The maximum annual average PM10 concentration of 49 µg/m3 was recorded in Metropolitan Riverside County. The federal annual PM10 standard has been revoked. The much more stringent state annual PM10 standard (20 µg/m3) was exceeded in most stations in each county in the Basin and in the Coachella Valley.

In 2016, PM2.5 concentrations were monitored at 19 locations throughout the Basin. U.S. EPA revised the federal 24-hour PM2.5 standard from 65 µg/m3 to 35 µg/m3, effective December 17, 2006. In 2016, the maximum PM2.5 concentrations in the Basin exceeded the new federal 24-hour PM2.5 standard in seven out of 19 locations. The maximum 24-hour PM2.5 concentration of 46.6 µg/m3 was recorded in the South San Gabriel Valley area. The 98th percentile 24-hour PM2.5 concentration of 35.1 µg/m3 was recorded in the Metropolitan Riverside County, which barely exceeds the federal standard of 35 µg/m3. The maximum annual average concentration of 14.73 µg/m3 was recorded in San Bernardino County, which represents 98 percent of the 2006 federal standard of 15 µg/m3.

On December 14, 2012, U.S. EPA strengthened the annual NAAQS for PM2.5 to 12 µg/m3 and, as part of the revisions, a requirement was added to monitor near the most heavily trafficked

roadways in large urban areas. Particle pollution is expected to be higher along these roadways as a result of direct emissions from cars and heavy-duty diesel trucks and buses. SCAQMD has installed the two required PM2.5 monitors by January 1, 2015, at locations selected based upon the existing near-roadway NO2 sites that were ranked higher for heavy-duty diesel traffic. The locations are: (1) I-710, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; and (2) SR-60, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland. These near-road sites measure PM2.5 daily with FRM filter-based measurements.

Lead

Lead in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric lead in the Basin over the past three decades.

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (breakdown of bone tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.

The state standards for lead were not exceeded in any area of the SCAQMD in 2016. There have been no violations of these standards at SCAQMD's regular air monitoring stations since 1982, as a result of removal of lead from gasoline. However, monitoring at two stations immediately adjacent to stationary sources of lead recorded exceedances of the standard in Los Angeles County over the 2007-2009 time period. These data were used for designations under the revised standard that also included new requirements for near-source monitoring. As a result, a nonattainment designation was finalized for much of the Los Angeles County portion of the Basin when the current standard was implemented.

The current lead concentrations in Los Angeles County are now below the NAAQS. The maximum quarterly average lead concentration (0.01 µg/m3 at several monitoring) was seven percent of the federal quarterly average lead standard (0.15 µg/m3). The maximum monthly average lead concentration (0.016 µg/m3 in South Central Los Angeles County) was one percent of the state monthly average lead standard. As a result of the 2012-2014 design value below the NAAQS, SCAQMD will be requesting that U.S. EPA re-designate the nonattainment area as attaining the federal lead standard. Stringent SCAQMD rules governing lead-producing sources will help to ensure that there are no future violations of the federal standard. Furthermore, one

business that had been responsible for the highest measured lead concentrations in Los Angeles County has closed and is in the process of demolition and site clean-up.

Sulfates

Sulfates are chemical compounds which contain the sulfate ion and are part of the mixture of solid materials which make up PM10. Most of the sulfates in the atmosphere are produced by oxidation of SO2. Oxidation of sulfur dioxide yields sulfur trioxide (SO3), which reacts with water to form sulfuric acid, which then contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields sulfates, a component of PM10 and PM2.5.

Most of the health effects associated with fine particles and SO2 at ambient levels are also associated with sulfates. Thus, both mortality and morbidity effects have been observed with an increase in ambient sulfate concentrations. However, efforts to separate the effects of sulfates from the effects of other pollutants have generally not been successful.

Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure. Animal studies suggest that acidic particles such as sulfuric acid aerosol and ammonium bisulfate are more toxic than nonacidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.

The most current preliminary data available for sulfates is for 2016. In 2016, the state 24-hour sulfate standard (25 µg/m3) was not exceeded in any of the 19 monitoring locations in the Basin. The maximum 24-hour sulfate concentration was 17.1 ppb, as recorded in the Central San Bernardino Valley. There are no federal sulfate standards.

Vinyl Chloride

Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as A1 (confirmed carcinogen in humans) and by the International Agency for Research on Cancer (IARC) as 1 (known to be a human carcinogen). (Air Gas, 2010.) At room temperature, vinyl chloride is a gas with a sickly sweet odor that is easily condensed. However, it is stored as a liquid. Due to the hazardous nature of vinyl chloride to human health there are no end products that use vinyl chloride in its monomer form. Vinyl chloride is a chemical intermediate, not a final product. It is an important industrial chemical chiefly used to produce polymer polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. Billions of pounds of PVC are sold on the global market each year. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles.

In the past, vinyl chloride emissions have been associated primarily with sources such as landfills. Risks from exposure to vinyl chloride are considered to be a localized impacts rather than regional impacts. Because landfills in the SCAQMD are subject to Rule 1150.1 – Control of Gaseous Emissions from Municipal Solid Waste Landfills, which contains stringent requirements for

landfill gas collection and control, potential vinyl chloride emissions are expected to be below the level of detection. Therefore, SCAQMD does not monitor for vinyl chloride at its monitoring stations.

Volatile Organic Compounds

It should be noted that there are no state or national ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated, however, because limiting VOC emissions reduces the rate of photochemical reactions that contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM10 and lower visibility levels.

Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOCs because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, one hydrocarbon component of VOC emissions, is known to be a human carcinogen.

Non-Criteria Pollutants

Although SCAQMD's primary mandate is attaining the state and NAAQS for criteria pollutants within the Basin, SCAQMD also has a general responsibility pursuant to Health and Safety Code Section 41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires SCAQMD to implement airborne toxic control measures (ATCM) adopted by CARB and to implement the Air Toxics "Hot Spots" Act. As a result, SCAQMD has regulated pollutants other than criteria pollutants such as TACs, greenhouse gases, and stratospheric ozone depleting compounds. SCAQMD has developed a number of rules to control non-criteria pollutants from both new and existing sources. These rules originated through state directives, CAA requirements, or the SCAQMD rulemaking process.

In addition to promulgating non-criteria pollutant rules, SCAQMD has been evaluating AQMP control measures as well as existing rules to determine whether or not they would affect, either positively or negatively, emissions of non-criteria pollutants. For example, rules in which VOC components of coating materials are replaced by a non-photochemically reactive chlorinated substance would reduce the impacts resulting from ozone formation, but could increase emissions of toxic compounds or other substances that may have adverse impacts on human health.

The following subsections summarize the existing setting for the two major categories of non-criteria pollutants: compounds that contribute to TACs, global climate change, and stratospheric ozone depletion.

Air Quality – Toxic Air Contaminants

Federal

Under Section 112 of the CAA, U.S. EPA is required to regulate sources that emit one or more of the 187 federally listed hazardous air pollutants (HAPs). HAPs are toxic air pollutants identified in the CAA, which are known or suspected of causing cancer or other serious health effects. The federal HAPs are listed on the U.S. EPA website at http://www.epa.gov/ttn/atw/orig189.html. In order to implement the CAA, approximately 100 National Emission Standards for Hazardous Air Pollutants (NESHAPs) have been promulgated by U.S. EPA for major sources (sources emitting greater than 10 tpy of a single HAP or greater than 25 tpy of multiple HAPs). SCAQMD can either directly implement NESHAPs or adopt rules that contain requirements at least as stringent as the NESHAP requirements. However, since NESHAPs often apply to sources in the Basin that are controlled, many of the sources that would have been subject to federal requirements already comply or are exempt.

In addition to the major source NESHAPs, U.S. EPA has also controlled HAPs from urban areas by developing Area Source NESHAPs under their Urban Air Toxics Strategy. U.S. EPA defines an area source as a source that emits less than 10 tons annually of any single hazardous air pollutant or less than 25 tons annually of a combination of hazardous air pollutants. The CAA requires the U.S. EPA to identify a list of at least 30 air toxics that pose the greatest potential health threat in urban areas. U.S. EPA is further required to identify and establish a list of area source categories that represent 90 percent of the emissions of the 30 urban air toxics associated with area sources, for which Area Source NESHAPs are to be developed under the CAA. U.S. EPA has identified a total of 70 area source categories with regulations promulgated for more than 30 categories so far.

The federal toxics program recognizes diesel engine exhaust (diesel particulate matter or DPM) as a health hazard; however, DPM itself is not one of their listed toxic air contaminants. Rather, each toxic compound in the speciated list of compounds in exhaust is considered separately. Although there are no specific NESHAP regulations for DPM, DPM reductions are realized through federal regulations including diesel fuel standards and emission standards for stationary, marine, and locomotive engines; and idling controls for locomotives.

State

The California air toxics program was based on the CAA and the original federal list of hazardous air pollutants. The state program was established in 1983 under the Toxic Air Contaminant Identification and Control Act, Assembly Bill (AB) 1807, Tanner. Under the state program, toxic air contaminants are identified through a two-step process of risk identification and risk management. This two-step process was designed to protect residents from the health effects of toxic substances in the air.

Control of TACs under the TAC Identification and Control Program: California's TAC identification and control program, adopted in 1983 as AB 1807, is a two-step program in which substances are identified as TACs and ATCMs are adopted to control emissions from specific sources. CARB has adopted a regulation designating all 188 federal hazardous air pollutants (HAPs) as TACs.

ATCMs are developed by CARB and implemented by SCAQMD and other air districts through the adoption of regulations of equal or greater stringency. Generally, the ATCMs reduce emissions to achieve exposure levels below a determined health threshold. If no such threshold levels are determined, emissions are reduced to the lowest level achievable through the best available control technology unless it is determined that an alternative level of emission reduction is adequate to protect public health.

Under California law, a federal NESHAP automatically becomes a state ATCM, unless CARB has already adopted an ATCM for the source category. Once a NESHAP becomes an ATCM, CARB and each air pollution control or air quality management district have certain responsibilities related to adoption or implementation and enforcement of the NESHAP/ATCM.

Control of TACs under the Air Toxics "Hot Spots" Act: The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) establishes a statewide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with the emissions. Facilities are phased into the AB 2588 program based on their emissions of criteria pollutants or their occurrence on lists of toxic emitters compiled by SCAQMD. Phase I consists of facilities that emit over 25 tons per year of any criteria pollutant and facilities present on SCAQMD's toxics list. Phase I facilities entered the program by reporting their TAC emissions for calendar year 1989. Phase II consists of facilities that emit between 10 and 25 tpy of any criteria pollutant and submitted air toxic inventory reports for calendar year 1990 emissions. Phase III consists of certain designated types of facilities which emit less than 10 tons per year of any criteria pollutant and submitted inventory reports for calendar year 1991 emissions. Inventory reports are required to be updated every four years under the state law.

Air Toxics Control Measures: As part of its risk management efforts, CARB has passed state ATCMs to address air toxics from mobile and stationary sources. Some key ATCMs for stationary sources include reductions of benzene emissions from service stations, hexavalent chromium emissions from chrome plating, perchloroethylene emissions from dry cleaning, ethylene oxide emissions from sterilizers, and multiple air toxics from the automotive painting and repair industries.

Many of CARB's recent ATCMs are part of the CARB Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Diesel Risk Reduction Plan), which was adopted in September 2000 (http://www.arb.ca.gov/diesel/documents/rrpapp.htm) with the goal of reducing DPM emissions from compression ignition engines and associated health risk by 75 percent by 2010 and 85 percent by 2020. The Diesel Risk Reduction Plan includes strategies to reduce emissions from new and existing engines through the use of ultra-low sulfur diesel fuel, add-on controls, and engine replacement. In addition to stationary source engines, the plan addresses DPM emissions from mobile sources such as trucks, buses, construction equipment, locomotives, and ships.

OEHHA Health Risk Assessment Guidelines: In 2003, OEHHA developed and approved its Health Risk Assessment Guidance document (2003 OEHHA Guidelines) and prepared a series of Technical Support Documents, reviewed and approved by the Scientific Review Panel (SRP), that

provided new scientific information showing that early-life exposures to air toxics contribute to an increased estimated lifetime risk of developing cancer and other adverse health effects, compared to exposures that occur in adulthood. As a result, OEHHA developed the Revised OEHHA Guidelines in March 2015, which incorporated this new scientific information. The new method utilizes higher estimates of cancer potency during early life exposures. There are also differences in the assumptions on breathing rates and length of residential exposures.

SCAQMD

SCAQMD has regulated criteria air pollutants using either a technology-based or an emissions limit approach. The technology-based approach defines specific control technologies that may be installed to reduce pollutant emissions. The emissions limit approach establishes an emission limit, and allows industry to use any emission control equipment, as long as the emission requirements are met. The regulation of TACs often uses a health risk-based approach, but may also require a regulatory approach similar to criteria pollutants, as explained in the following subsections.

Rules and Regulations: Under SCAQMD's toxic regulatory program there are 26 source-specific rules that target toxic emission reductions that regulate over 10,000 sources such as metal finishing, spraying operations, dry cleaners, film cleaning, gasoline dispensing, and diesel-fueled stationary engines to name a few. In addition, other source-specific rules targeting criteria pollutant reductions also reduce toxic emissions, such as Rule 461 – Gasoline Transfer and Dispensing, which reduces benzene emissions from gasoline dispensing, and Rule 1124 – Aerospace Assembly and Component Manufacturing Operations, which reduces perchloroethylene, trichloroethylene, and methylene chloride emissions from aerospace operations.

New and modified sources of toxic air contaminants in the SCAQMD are subject to Rule 1401 - New Source Review of Toxic Air Contaminants and Rule 212 - Standards for Approving Permits. Rule 212 requires notification of SCAQMD's intent to grant a permit to construct a significant project, defined as a new or modified permit unit located within 1000 feet of a school (a state law requirement under AB 3205), a new or modified permit unit posing a maximum individual cancer risk of one in one million (1×10^6) or greater, or a new or modified facility with criteria pollutant emissions exceeding specified daily maximums. Distribution of notice is required to all addresses within a quarter mile radius, or other area deemed appropriate by SCAQMD. Rule 1401 currently controls emissions of carcinogenic and non-carcinogenic (health effects other than cancer) air contaminants from new, modified and relocated sources by specifying limits on cancer risk and hazard index (explained further in the following discussion), respectively. The rule lists nearly 300 TACs that are evaluated during SCAQMD's permitting process for new, modified, or relocated sources. During the past decade, more than ten compounds have been added or had risk values amended. The addition of DPM from diesel-fueled internal combustion engines as a TAC in March 2008 was the most significant of recent amendments to the rule. Rule 1401.1 – Requirements for New and Relocated Facilities Near Schools sets risk thresholds for new and relocated facilities near schools. The requirements are more stringent than those for other air toxics rules in order to provide additional protection to school children.

Air Toxics Control Plan: On March 17, 2000, the SCAQMD Governing Board approved the Air Toxics Control Plan (2000 ATCP), which was the first comprehensive plan in the nation to guide future toxic rulemaking and programs. The ATCP was developed to lay out SCAQMD's air toxics control program which built upon existing federal, state, and local toxic control programs as well as co-benefits from implementation of SIP measures. The concept for the plan was an outgrowth of the Environmental Justice principles and the Environmental Justice Initiatives adopted by SCAQMD Governing Board on October 10, 1997. Monitoring studies and air toxics regulations that were created from these initiatives emphasized the need for a more systematic approach to reducing toxic air contaminants. The intent of the plan was to reduce exposure to air toxics in an equitable and cost-effective manner that promotes clean, healthful air in the SCAQMD. The plan proposed control strategies to reduce TACs in the SCAQMD implemented between years 2000 and 2010 through cooperative efforts of SCAQMD, local governments, CARB, and U.S. EPA.

Cumulative Impact Reduction Strategies (CIRS): The CIRS was presented to the SCAQMD Governing Board on September 5, 2003, as part of the White Paper on Regulatory Options for Addressing Cumulative Impacts from Air Pollution Emissions. The resulting 25 cumulative impacts strategies were a key element of the Addendum to March 2000 Final Draft Air Toxics Control Plan for Next Ten Years (2004 Addendum). The strategies included rules, policies, funding, education, and cooperation with other agencies. Some of the key SCAQMD accomplishments related to the cumulative impacts reduction strategies were:

- Rule 1401.1, which set more stringent health risk requirements for new and relocated facilities near schools
- Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines, which established DPM emission limits and other requirements for diesel-fueled engines
- Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium, which regulated chrome spraying operations
- Rule 410 – Odor from Transfer Stations and Material Recovery Facilities which addresses odors from transfer stations and material recovery facilities
- Intergovernmental Review comment letters for CEQA documents
- SCAQMD's land use guidance document
- Additional protection in toxics rules for sensitive receptors, such as more stringent requirements for chrome plating operations and diesel engines located near schools

2004 Addendum: The 2004 Addendum was adopted by the SCAQMD Governing Board on April 2, 2004, and served as a status report regarding implementation of the various mobile and stationary source strategies in the 2000 ATCP and introduced new measures to further address air toxics. The main elements of the 2004 Addendum were to address the progress made in the implementation of the 2000 ATCP control strategies; provide a historical perspective of air toxic emissions and current air toxic levels; incorporate the CIRS approved in 2003 and additional measures identified in the 2003 AQMP; project future air toxic levels to the extent feasible; and summarize future efforts to develop the next ATCP. Significant progress had been made in

implementing most of SCAQMD strategies from the 2000 ATCP and the 2004 Addendum. CARB has also made notable progress in mobile source measures via its Diesel Risk Reduction Plan, especially for goods movement related sources, while the U.S. EPA continued to implement their air toxic programs applicable to stationary sources.

Clean Communities Plan: On November 5, 2010, the SCAQMD Governing Board approved the 2010 Clean Communities Plan (CCP). The CCP was an update to the 2000 ATCP and the 2004 Addendum. The objective of the 2010 CCP was to reduce exposure to air toxics and air-related nuisances throughout the SCAQMD, with emphasis on cumulative impacts. The elements of the 2010 CCP are community exposure reduction, community participation, communication and outreach, agency coordination, monitoring and compliance, source-specific programs, and nuisance. The centerpiece of the 2010 CCP is a pilot study through which SCAQMD staff works with community stakeholders to identify and develop solutions community-specific to air quality issues in two communities: (1) the City of San Bernardino; and (2) Boyle Heights and surrounding areas.

Control of TACs under the Air Toxics "Hot Spots" Act: On October 2, 1992, the SCAQMD Governing Board adopted public notification procedures for Phase I and II facilities. These procedures specify that AB 2588 facilities must provide public notice when exceeding the following risk levels:

- Maximum Individual Cancer Risk: greater than 10 in one million (10×10^6)
- Total Hazard Index: greater than 1.0 for TACs except lead, or > 0.5 for lead

Public notice is to be provided by letters mailed to all addresses and all parents of children attending school in the impacted area. In addition, facilities must hold a public meeting and provide copies of the facility risk assessment in all school libraries and a public library in the impacted area.

The AB 2588 Toxics “Hot Spots” Program is implemented through Rule 1402 - Control of Toxic Air Contaminants from Existing Sources. SCAQMD continues to review health risk assessments submitted. Notification is required from facilities with a significant risk under the AB 2588 program based on their initial approved health risk assessments and will continue on an ongoing basis as additional and subsequent health risk assessments are reviewed and approved.

There are currently about 361 facilities in SCAQMD’s AB 2588 program. Since 1992 when the state Health and Safety Code incorporated a risk reduction requirement in the program, SCAQMD has reviewed and approved over 335 HRAs; 50 facilities were required to do a public notice and 24 facilities were subject to risk reduction. Currently, over 96 percent of the facilities in the program have cancer risks below ten in a million and over 97 percent have acute and chronic hazard indices of less than one. (SCAQMD, 2015a.)

CEQA Intergovernmental Review Program: SCAQMD staff, through its Intergovernmental Review (IGR), provides comments to lead agencies on air quality analyses and mitigation measures in CEQA documents. The following are some key programs and tools that have been developed more recently to strengthen air quality analyses, specifically as they relate to exposure of mobile source air toxics:

- SCAQMD's Mobile Source Committee approved the "Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions" (August 2002). This document provides guidance for analyzing cancer risks from DPM from truck idling and movement (e.g., truck stops, warehouse and distribution centers, or transit centers), ship hoteling at ports, and train idling.
- CalEPA and CARB's "Air Quality and Land Use Handbook: A Community Health Perspective" (April 2005), provides recommended siting distances for incompatible land uses.
- Western Riverside Council of Governments' Regional Air Quality Task Force developed a policy document titled "Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities" (September 2005). This document provides guidance to local government on preventive measures to reduce neighborhood exposure to toxic air contaminants from warehousing facilities.

Environmental Justice (EJ): Environmental justice has long been a focus of SCAQMD. In 1990, SCAQMD formed an Ethnic Community Advisory Group that was restructured as the Environmental Justice Advisory Group (EJAG) in 2008. EJAG's mission is to advise and assist SCAQMD in protecting and improving public health in SCAQMD's most impacted communities through the reduction and prevention of air pollution.

In 1997, the SCAQMD Governing Board adopted four guiding principles and ten initiatives (http://www.aqmd.gov/ej/history.htm) to ensure environmental equity. Also in 1997, the SCAQMD Governing Board expanded the initiatives to include the "Children's Air Quality Agenda" focusing on the disproportionate impacts of poor air quality on children. Some key initiatives that have been implemented were the Multiple Air Toxics Exposure Studies (MATES, MATES II, MATES III, and MATES IV); the Clean Fleet Rules; CIRS; funding for lower emitting technologies under the Carl Moyer Program; the Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning; a guidance document on Air Quality Issues in School Site Selection; and the 2000 ATCP and its 2004 Addendum. Key initiatives focusing on communities and residents include the Clean Air Congress; the Clean School Bus Program; Asthma and Air Quality Consortium; Brain and Lung Tumor and Air Pollution Foundation; air quality presentations to schools and community and civic groups; and Town Hall meetings. Technological and scientific projects and programs have been a large part of SCAQMD's EJ program since its inception. Over time, the EJ program's focus on public education, outreach, and opportunities for public participation have greatly increased. Public education materials and other resources for the public are available on SCAQMD's website (www.aqmd.gov).

AB 2766 Subvention Funds: AB 2766 subvention funds, money collected by the state as part of vehicle registration and passed through to SCAQMD, is used to fund projects in local cities that reduce motor vehicle air pollutants. The Clean Fuels Program, funded by a surcharge on motor vehicle registrations in SCAQMD, reduces TAC emissions through co-funding projects that develop and demonstrate low-emission clean fuels and advanced technologies, and to promote commercialization and deployment of promising or proven technologies in Southern California.

Carl Moyer Program: Another program that targets diesel emission reductions is the Carl Moyer Program, which provides grants for projects that achieve early or extra emission reductions beyond what is required by regulations. Examples of eligible projects include cleaner on-road, off-road, marine, locomotive, and stationary agricultural pump engines. Other endeavors of SCAQMD's Technology Advancement Office help to reduce DPM emissions through co-funding research and demonstration projects of clean technologies, such as low-emitting locomotives.

Control of TACs with Risk Reduction Audits and Plans: Senate Bill (SB) 1731, enacted in 1992 and codified in Health and Safety Code Section 44390 et seq., amended AB 2588 to include a requirement for facilities with significant risks to prepare and implement a risk reduction plan that will reduce the risk below a defined significant risk level within specified time limits. SCAQMD Rule 1402 was adopted on April 8, 1994, to implement the requirements of SB 1731. In addition to the TAC rules adopted by SCAQMD under authority of AB 1807 and SB 1731, SCAQMD has adopted source-specific TAC rules, based on the specific level of TAC emitted and the needs of the area. These rules are similar to the state's ATCMs because they are source-specific and only address emissions and risk from specific compounds and operations.

Multiple Air Toxics Exposure Studies

Multiple Air Toxics Exposure Study (MATES): In 1986, SCAQMD conducted the first MATES report to determine the Basin-wide risks associated with major airborne carcinogens. At the time, the state of technology was such that only 20 known air toxic compounds could be analyzed and diesel exhaust particulate did not have an agency accepted carcinogenic health risk value. TACs are determined by U.S. EPA, and by CalEPA, including OEHHA and CARB. For purposes of MATES, the California carcinogenic health risk factors were used. The maximum combined individual health risk for simultaneous exposure to pollutants under the study was estimated to be 600 to 5,000 in one million.

Multiple Air Toxics Exposure Study II (MATES II): At its October 10, 1997 meeting, the SCAQMD Governing Board directed staff to conduct a follow up to the MATES report to quantify the magnitude of population exposure risk from existing sources of selected air toxic contaminants at that time. MATES II included a monitoring program of 40 known air toxic compounds, an updated emissions inventory of toxic air contaminants (including microinventories around each of the 14 microscale sites), and a modeling effort to characterize health risks from hazardous air pollutants. The estimated Basin-wide carcinogenic health risk from ambient measurements was 1,400 per million people. About 70 percent of the Basin-wide health risk was attributed to DPM emissions; about 20 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde); about 10 percent of Basin-wide health risk was attributed to

stationary sources (which include industrial sources and other certain specifically identified commercial businesses such as dry cleaners and print shops.)

Multiple Air Toxics Exposure Study III (MATES III): MATES III was part of the SCAQMD Governing Board's 2003-04 Environmental Justice Workplan approved on September 5, 2003. The MATES III report consisted of several elements including a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize carcinogenic health risk across the Basin. Besides toxics, additional measurements included organic carbon, elemental carbon, and total carbon, as well as, Particulate Matter (PM), including PM2.5. It did not estimate mortality or other health effects from particulate exposures. MATES III revealed a general downward trend in air toxic pollutant concentrations with an estimated Basin-wide lifetime carcinogenic health risk of 1,200 in one million. Mobile sources accounted for 94 percent of the basin-wide lifetime carcinogenic health risk with diesel exhaust particulate contributing to 84 percent of the mobile source Basin-wide lifetime carcinogenic health risk. Non-diesel carcinogenic health risk declined by 50 percent from the MATES II values.

Multiple Air Toxics Exposure Study IV (MATES IV): MATES IV, the current version, includes a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk across the Basin. The study focuses on the carcinogenic risk from exposure to air toxics but does not estimate mortality or other health effects from particulate exposures. An additional focus of MATES IV is the inclusion of measurements of ultrafine particle concentrations. MATES IV incorporates the updated health risk assessment methodology from OEHHA. Compared to previous studies of air toxics in the Basin, this study found decreasing air toxics exposure, with the estimated Basin-wide population-weighted risk down by about 57 percent from the analysis done for the MATES III time period. The ambient air toxics data from the ten fixed monitoring locations also demonstrated a similar reduction in air toxic levels and risks. On average, diesel particulate contributes about 68 percent of the total air toxics risk. This is a lower portion of the overall risk compared to the MATES III estimates of about 84 percent.

Health Effects

Carcinogenic Health Risks from TACs: One of the primary health risks of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no "safe" level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of causing cancer. It is currently estimated that about one in four deaths in the United States is attributable to cancer. The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods.

Non-Cancer Health Risks from TACs: Unlike carcinogens, for most non-carcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. CalEPA's OEHHA develops Reference Exposure Levels (RELs) for TACs which are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

CHAPTER 4

Environmental Impacts

Introduction

Potential Significant Environmental Impacts and Mitigation Measures

Air Quality

Cumulative Environmental Impacts

Potential Environmental Impacts Found Not to be Significant

Significant Environmental Effects Which Cannot Be Avoided

Significant Irreversible Environmental Changes

Potential Growth-Inducing Impacts

Relationship Between Short-Term Uses and Long-Term Productivity

INTRODUCTION

The CEQA Guidelines require environmental documents to identify significant environmental effects that may result from a proposed project. (CEQA Guidelines Section 15126.2(a).) Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. The discussion of environmental impacts may include, but is not limited to: the resources involved; physical changes; alterations of ecological systems; health and safety problems caused by physical changes; and other aspects of the resource base, including water, scenic quality, and public services. If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible. (CEQA Guidelines Section 15126.4.)

The categories of environmental impacts to be studied in a CEQA document are established by CEQA (Public Resources Code Section 21000 et seq.), and the CEQA Guidelines, as codified in Title 14 California Code of Regulations Section 15000 *et seq.* Under the CEQA Guidelines, there are approximately 17 environmental categories in which potential adverse impacts from a project are evaluated.

The CEQA Guidelines also indicate that the degree of specificity required in a CEQA document depends on the type of project being proposed. (CEQA Guidelines Section 15146.) The detail of the environmental analysis for certain types of projects cannot be as great as for others. As explained in Chapter 1, the analysis of PAR 1111 indicated that the type of CEQA document appropriate for the proposed project is a SEA.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This document is a SEA to the September 2014 Final EA. The previous environmental analysis in the September 2014 Final EA contained an environmental checklist and concluded that none of the 17 environmental topic areas would have potentially significant adverse impacts at the time the September 2014 amendments to Rule 1111 were adopted. PAR 1111, similar to Rule 1111, would also extend the compliance dates for residential and commercial fan-type central furnaces. In addition, PAR 1111 proposes to increase the mitigation fee and clarify exemptions to prevent circumvention of the rule. A rebate program, separate from the rule amendment, is also proposed. Initial analysis of PAR 1111 is expected to result in NOx emission reductions foregone of up to 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031. The amount of NOx emission reductions foregone is expected to exceed the SCAQMD's significant operation air quality threshold for NOx (e.g., 55 pounds per day); thus, implementation of PAR 1111 would be expected to have significant adverse operational air quality impacts. The proposed changes contained in PAR 1111 are considered to contain new information of substantial importance, which was not known and could not have been known at the time the previous CEQA document for Rule 1111 (e.g., the September 2014 Final EA) was certified. Specifically, because the quantity of NOx emission reductions foregone would exceed the SCAQMD's significance operational air quality threshold for NOx (e.g., 55 pounds per day) and that these effects were not discussed in the previously certified CEQA documents, PAR 1111 will create new significant

effects to operational air quality that need to be further evaluated in this SEA per CEQA Guidelines Section 15162(a)(3)(A). Thus, only the topic of operational air quality has been analyzed in this SEA.

The environmental impact analysis for this environmental topic area incorporates a "worst-case" approach. This approach entails the premise that whenever the analysis requires that assumptions be made, those assumptions that result in the greatest adverse impacts are typically chosen. This method ensures that all potential effects of the proposed project are documented for the decision-makers and the public. Accordingly, the following analyses use a conservative "worst-case" approach for analyzing the potentially significant adverse operational air quality impacts associated with the implementation of the PAR 1111.

AIR QUALITY

Significance Criteria

To determine whether air quality impacts from adopting and implementing PAR 1111 are significant, impacts will be evaluated and compared to the following criteria. If impacts exceed any of the significance thresholds in Table 4-1, they will be considered significant. All feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible. PAR 1111 would be considered to have significant adverse air quality impacts if any one of the thresholds in Table 4-1 are equaled or exceeded.

In general, the SCAQMD makes significance determinations for construction impacts based on the maximum or peak daily emissions during the construction period, which provides a "worst-case" analysis of the construction emissions. However, since PAR 1111 would require manufacturers to adjust their current furnaces to achieve the NOx emission limit of 14 ng/J, no construction activities are associated with implementing PAR 1111. Thus, the construction air quality significance thresholds do not apply to this project. Similarly, significance determinations for operational emissions are based on the maximum or peak daily allowable emissions during the operational phase.

Table 4-1
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction** [b]	**Operation** [c]
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO_2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO_2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average annual average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
$PM_{2.5}$ 24-hour average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation)	
SO_2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 μg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 μg/m^3 (state) 0.15 μg/m^3 (federal)	

[a] Source: SCAQMD CEQA Handbook (SCAQMD, 1993)
[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million μg/m^3 = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO_2eq = metric tons per year of CO_2 equivalents > = greater than

Revision: March 2015

Project-Specific Air Quality Impacts During Operation

PAR 1111 will provide relief to manufacturers by extending the compliance dates for residential and commercial fan-type central furnaces. Compliance dates for complying with the NOx limit established in Rule 1111 would be further extended in PAR 1111 for the following equipment categories: 1) condensing furnaces from April 1, 2018, to October 1, 2019; 2) non-condensing furnaces from October 1, 2018, to October 1, 2019; 3) weatherized furnaces from October 1, 2019, to October 1, 2020; and 4) mobile home furnaces from October 1, 2021, to October 1, 2022. Table 4-2 summarizes the change in compliance dates from the existing Rule 1111 to PAR 1111. In addition, it is important to note the PAR 1111 does not propose to change the 14 ng/J NOx emission limit which is currently established in Rule 1111. Since the September 2014 amendments to Rule 1111 had already established the 14 ng/J NOx emission limit, manufacturers were expected at that time to change their current manufacturing operations in order to develop and begin manufacturing compliant units. Since the requirement to develop compliant units is now part of the existing setting, PAR 1111 is not expected to alter how equipment manufacturers will proceed in order develop and manufacture compliant units in order to comply with PAR 1111 by the end of the alternative compliance option for each equipment category.

Table 4-2

Rule 1111 and PAR 1111 Compliance Dates

Equipment Category	Rule 1111 Compliance End Date	PAR 1111 Extended Compliance Dates
Condensing Furnace	March 31, 2018	April 1, 2018 – October 1, 2019
Non-Condensing Furnace	September 30, 2018	October 1, 2018 – October 1, 2019
Weatherized Furnace	September 30, 2019	October 1, 2019 – October 1, 2020
Mobile Home Furnace	September 30, 2021	October 1, 2021 – October 1, 2022

The estimates of NOx emission reductions foregone from residential and commercial fan-type central furnaces are based on the SCAQMD's 2016 Air Quality Management Plan (AQMP) emission inventory for actual natural gas consumption data from 2012. The reported annual average NOx emissions from residential heating that uses natural gas was 9.51 tons per day in 2012. Based on heating trends, most NOx emissions occur between October and May, and thus daily emissions during these months are higher than for the rest of the year. A typical residential or commercial fan-type central furnace emits 1.5 to 2.0 pounds of NOx per year and has a lifetime of approximately 20 to 25 years. The September 2014 amendments to Rule 1111 estimated that the annual average NOx emissions would be reduced by about 0.80 to 1.00 ton per day in 2018 and 2.03 to 2.54 tons per day in 2023. Replacement of existing furnaces with 14 ng/J furnaces was estimated to occur by 2047, approximately 25 years after the end of the last compliance date. Once all the existing furnaces are replaced, PAR 1111 is estimated to reduce NOx emissions from 9.51 tons per day to 6.18 tons per day. The NOx emission reduction was estimated based on the change in the NOx emission limit from furnaces with a NOx emission limit of 40ng/J (baseline) to 14ng/J (PAR 1111), a 65 percent reduction.

Based on this information, PAR 1111 would result in a delay in emissions reductions for residential and commercial fan-type central furnaces of up to 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031. However, the emission reductions foregone will be eventually achieved because existing furnaces will be eventually replaced and upgraded over time. Condensing, Non-Condensing, Weatherized, and Mobile Home furnaces are already subject to the existing emissions limits previously established in Rule 1111. Table 4-3 presents a summary of the emissions reductions foregone, where most will be eventually recovered over time. NOx is the only pollutant that is affected by PAR 1111 because the focus of the rule is to reduce NOx emissions from the affected categories of furnaces. As shown in Table 4-3, the quantity of peak daily operational NOx emission reductions foregone exceeds the SCAQMD's CEQA significance threshold for operation. Thus, PAR 1111 will result in significant adverse operational air quality impacts for NOx.

Table 4-3
Estimated NOx Emissions Reduction Foregone

Year	Total Estimated NOx Emission Reductions Foregone	
	Tons per Day	Pounds per Day
2018	0.07 – 0.09	140 – 180
2023	0.26 – 0.33	520 – 660
2031	0.26 – 0.33	520 – 660
NOx SIGNIFICANCE THRESHOLD	0.0275*	55
SIGNIFICANT?	YES	YES

* The NOx significance threshold for operation is 55 pounds per day which is equivalent to 0.0275 tons per day.

If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize the impacts of the proposed project. Adjustments to compliance dates for certain types of equipment are proposed in PAR 1111 because Rule 1111-compliant equipment are not currently available for most OEMs. For this reason, the NOx emission limits in the current version of Rule 1111 are unachievable and consequently, the previously estimated NOx emission reductions have also not occurred. If compliant equipment were widely available on the market, PAR 1111 would not be necessary. By allowing manufacturers more time to develop compliant units as proposed in PAR 1111, the originally projected NOx emission reductions will be delayed. As such, there are no feasible mitigation measures that would eliminate or reduce the significant adverse operational air quality impacts for NOx emissions to less than significant levels if PAR 1111 is implemented.

It is important to note that because PAR 1111 focuses on reducing NOx emissions, emissions of other criteria pollutants (e.g., CO, VOC, SOx, PM10, and PM2.5) and toxic air contaminants are not expected to change as a result of PAR 1111 compared with the current requirements for the

affected sources under Rule 1111. Thus, PAR 1111 will not result in significant adverse operational air quality impacts for CO, VOC, SOx, PM10, PM2.5 and toxic air contaminants.

CUMULATIVE ENVIRONMENTAL IMPACTS

The cumulative secondary impacts associated with the extended compliance dates and equipment replacement schedules and changes in emission limits of NOx as contained in PAR 1111 will have the potential for creating significant adverse operational air quality impacts for NOx that is evaluated in the previous subchapters and presented in Table 4-3 in this Draft SEA. Therefore, adopting PAR 1111 will result in a cumulatively considerable net increase of NOx for which the project region is non-attainment of ozone under NAAQS.

POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

Because this SEA is subsequent to the September 2014 Final EA, this SEA relies on the conclusions reached in that document as evidence for impacts found not to be significant. The September 2014 Final EA included an environmental checklist comprised of approximately 17 environmental topic areas that analyzed whether the September 2014 amendments to Rule 1111 would create potentially significant adverse impacts. The analysis in the September 2014 Final EA concluded that the following environmental areas would not be significantly adversely affected:

- aesthetics
- air quality and greenhouse gas emissions (GHGs) during construction and operation
- agriculture and forestry resources
- biological resources
- cultural resources
- energy
- geology and soils
- hazards and hazardous materials
- hydrology and water quality
- land use and planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- solid and hazardous waste
- transportation and traffic

The detailed evaluation of the above environmental topic areas is contained in Chapter 2 of the September 2014 Final EA and is not repeated here.

The September 2014 Final EA concluded that Rule 1111 would have no significant or less than significant direct or indirect adverse effects for all 17 environmental topics areas, and these conclusions are consistent with the conclusions reached in this SEA for all environmental topic areas except for the topic of operational air quality, which has been shown to result in significant adverse impacts if PAR 1111 is implemented.

As such, the analysis in this SEA concluded that the following environmental areas would not be significantly adversely affected:

- aesthetics
- air quality during construction and GHGs during construction and operation
- agriculture and forestry resources
- biological resources
- cultural resources
- energy
- geology and soils
- hazards and hazardous materials
- hydrology and water quality
- land use and planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- solid and hazardous waste
- transportation and traffic

SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

CEQA Guidelines Section 15126(b) requires an environmental analysis to consider "any significant environmental effects which cannot be avoided if the proposed project is implemented." This Draft SEA identified the topic of air quality during operation as the environmental topic area having potentially significant adverse environmental affects if PAR 1111 is implemented. As explained previously, without commercially available compliant units available on the market, the significant adverse air quality impacts during operation cannot be fully feasibly mitigated

concurrently and thus, the amount of NOx emission reductions foregone would result in a significant and unavoidable impact if PAR 1111 is implemented.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Section 15126(c) requires an environmental analysis to consider "any significant irreversible environmental changes which would be involved if the proposed action should be implemented." This Draft SEA identified the topic of air quality during operation as the only environmental area with potentially significant adverse impacts if PAR 1111 is implemented. While replacement of residential and commercial fan-type central furnaces according to the extended compliance schedule in PAR 1111 is likely to ensure replacement of all existing furnaces by 2047 and eventually achieve the project NOx emission reductions over the long-term, the proposed changes to PAR 1111 would delay emissions reductions on the short-term for residential and commercial fan-type central furnaces of up to 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031. These NOx emission reductions foregone occurring during the short-term will not increase existing emissions, but prevent new NOx emission reductions from occurring in the specified years. However, a portion of the NOx emission reductions foregone will be eventually achieved starting in compliance year 2018. Thus, despite the delay in implementation of some of the compliance dates as proposed in PAR 1111, the overall NOx emission reductions as originally estimated in the September 2014 version of Rule 1111 will be eventually achieved if PAR 1111 is implemented. Further, even though the projected NOx emission reductions foregone are estimated to be up to 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, the 2012 AQMP allocated one ton per day of NOx emissions in the SIP set aside account for every year starting in year 2013 to year 2030 in the event that NOx emission reductions were not achieved via rule adoptions or amendments. This NOx set aside account was re-evaluated and revised in the Final 2016 AQMP based on expected growth and the number of projects expected to take place in near future years to 2.0 tons per day for every year starting in year 2017 to year 2025 and 1.0 ton per day for every year starting in year 2026 to year 2031. As a result, even though PAR 1111 would delay the achievement of the originally projected NOx emission reductions, implementation of other control measures in the 2016 AQMP will provide human health benefits by reducing population exposures to existing NOx emissions. For these aforementioned reasons, the proposed project would not result in irreversible environmental changes or irretrievable commitment of resources.

POTENTIAL GROWTH-INDUCING IMPACTS

CEQA Guidelines Section 15126(d) requires an environmental analysis to consider the "growth-inducing impact of the proposed action." Implementing the proposed project will not, by itself, have any direct or indirect growth-inducing impacts on businesses in the SCAQMD's jurisdiction because it is not expected to foster economic or population growth or the construction of additional housing and primarily affects existing facilities.

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

CEQA documents are required to explain and make findings about the relationship between short-term uses and long-term productivity. (CEQA Guidelines Section 15065(a)(2).) An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term goals or maximizing

productivity of these resources. Implementing the proposed project is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the proposed project is to provide compliance relief for a limited group of emission sources. The September 2014 amendments to Rule 1111 did not achieve all of the NOx emission reductions originally contemplated at that time and PAR 1111 will continue to delay these projected NOx emission reductions starting in 2018, PAR 1111 will gradually begin to achieve some NOx emission reductions but the NOx emission reductions foregone will not be fully eliminated until 2047. NOx, is a precursor to the formation of ozone and PM2.5, so even if PAR 1111 is implemented and there will be some NOx emission reductions foregone occurring primarily between compliance years 2018 and 2031, there will also be some NOx emissions reductions occurring in 2018 and these will continue to help attain federal and state air quality standards which are expected to enhance short- and long-term environmental productivity in the region. Implementing the proposed project does not narrow the range of beneficial uses of the environment. Of the potential environmental impacts discussed in Chapter 4, only those related to operational air quality are considered potentially significant.

CHAPTER 5

ALTERNATIVES

Introduction

Alternatives Rejected as Infeasible

Description of Alternatives

Comparison of Alternatives

Conclusion

INTRODUCTION

This Draft SEA provides a discussion of alternatives to the proposed project as required by CEQA. Alternatives include measures for attaining objectives of the proposed project and provide a means for evaluating the comparative merits of each alternative. A 'no project' alternative must also be evaluated. The range of alternatives must be sufficient to permit a reasoned choice, but need not include every conceivable project alternative. CEQA Guidelines Section 15126.6(c) specifically notes that the range of alternatives required in a CEQA document is governed by a 'rule of reason' and only necessitates that the CEQA document set forth those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion of alternatives fosters informed decision making and meaningful public participation. A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. SCAQMD Rule 110 (the rule which implements the SCAQMD's certified regulatory program) does not impose any greater requirements for a discussion of project alternatives in a SEA than is required for an EIR under CEQA.

Four alternatives to the proposed project are summarized in Table 5-1: Alternative A (No Project), Alternative B (More Stringent NOx Limit), Alternative C (Less Stringent Timing), and Alternative D (More Mitigation). Pursuant to the requirements in CEQA Guidelines Section 15126.6(b) to mitigate or avoid the significant effects that a project may have on the environment, a comparison of the potential operational air quality impacts from each of the project alternatives for the individual rule components that comprise the proposed project is provided in Table 5-2. Aside from this environmental topic area, no other significant adverse impacts were identified for the proposed project or any of the project alternatives. The proposed project is considered to provide the best balance between emission reductions and the adverse environmental impacts due to operation activities while meeting the objectives of the project. Therefore, the proposed project is preferred over the project alternatives.

The Governing Board may choose to adopt any portion or all of any alternative presented in the Final SEA with appropriate findings as required by CEQA. The Governing Board is able to adopt any portion or all of any of the alternatives presented because the impacts of each alternative will be fully disclosed to the public and the public will have the opportunity to comment on the alternatives and impacts generated by each alternative. Written suggestions on potential project alternatives received during the comment period for the Draft SEA will be considered when preparing the Final SEA and included as an appendix in the Final SEA.

Table 5-1
Summary of the Proposed Project and Alternatives

KEY RULE COMPONENTS	**PROPOSED PROJECT**	**ALTERNATIVE A** No Project	**ALTERNATIVE B** More Stringent NOx Limit	**ALTERNATIVE C** Less Stringent Timing	**ALTERNATIVE D** More Mitigation
NOx Limit	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018	• **10 ng/J for all equipment types** • **10 ng/J for mobile home furnaces** by October 1, 2018	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018	• 14 ng/J for all equipment types currently in effect • 14 ng/J for mobile home furnaces by October 1, 2018
Alternate Compliance Option to Meeting NOx Limit	Allowed to pay a mitigation fee in lieu of meeting NOx limit but with **extended compliance dates and increased mitigation fees** Mitigation Fee Schedule: • **Condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Non-condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Weatherized Unit** $400 per unit *Date of Adoption – September 30, 2020* • **Mobile Home Unit** $400 per unit *October 1, 2018 – September 30, 2022*	Allowed to pay a mitigation fee in lieu of meeting NOx limit with **existing rule compliance dates** Mitigation Fee Schedule: • **Condensing Unit** $200 per unit *April 1, 2015 – March 31, 2018* • **Non-condensing Unit** $150 per unit *October 1, 2015 – September 30, 2018* • **Weatherized Unit** $150 per unit *October 1, 2016 – September 30, 2019* • **Mobile Home Unit** $150 per unit • *October 1, 2018 – September 30, 2021*	Allowed to pay a mitigation fee in lieu of meeting NOx limit but with extended compliance dates and increased mitigation fees Mitigation Fee Schedule: • **Condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Non-condensing Unit** $400 per unit *Date of Adoption – September 30, 2019* • **Weatherized Unit** $400 per unit *Date of Adoption – September 30, 2020* • **Mobile Home Unit** $400 per unit *October 1, 2018 – September 30, 2022*	Allowed to pay the mitigation fee in lieu of meeting NOx limit but with an increased mitigation fee and a **three year extension of the compliance dates** Mitigation Fee Schedule: • **Condensing Unit** $400 per unit *Date of Adoption – March 31, 2021* • **Non-condensing Unit** $400 per unit *Date of Adoption – September 30, 2021* • **Weatherized Unit** $400 per unit *Date of Adoption – September 30, 2022* • **Mobile Home Unit** $400 per unit *October 1, 2018 – September 30, 2024*	Allowed to pay a mitigation fee in lieu of meeting NOx limit but with **extended compliance dates and increased mitigation fees** Mitigation Fee Schedule: • **Condensing Unit $500 per unit** *Date of Adoption – September 30, 2019* • **Non-condensing Unit $500 per unit** *Date of Adoption – September 30, 2019* • **Weatherized Unit $500 per unit** *Date of Adoption – September 30, 2020* • **Mobile Home Unit $500 per unit** *October 1, 2018 – September 30, 2022*

Table 5-2
Comparison of Adverse Environmental Impacts of the Proposed Project and Alternatives

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent NOx Limit	ALTERNATIVE C Less Stringent Timing	ALTERNATIVE D More Mitigation
Air Quality (During Operation)	Expected to result in NOx emission reductions foregone of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031.	No new NOx emission reductions foregone. Existing compliance deadlines to achieve 14ng/J would remain intact.	Expected to result in lesser quantities of NOx emission reductions foregone over a shorter time frame than the proposed project.	Expected to result in equivalent NOx emission reductions foregone as the proposed project except that the recovery of the NOx emission reductions foregone will occur over a longer time frame than the proposed project.	Expected to result in equivalent NOx emission reductions foregone as the proposed project.
Significance of Air Quality Operational Impacts	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx due to the quantity of NOx emission reductions foregone.	Not significant: Does not exceed SCAQMD's regional air quality CEQA significance threshold for NOx. Compliance cannot be achieved by the original compliance schedule.	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx but at an amount that is less significant than the proposed project.	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx due to the quantity of NOx emission reductions foregone, but at an amount that is more significant than the proposed project and for a greater period of time than the proposed project.	Significant: Exceeds the SCAQMD's regional air quality CEQA significance threshold for NOx due to the quantity of NOx emission reductions foregone at an amount that is equivalent to the proposed project. However, the additional mitigation fee will provide the SCAQMD with additional funding for the rebate program and additional projects to achieve additional NOx emission reductions throughout the Basin.

ALTERNATIVES REJECTED AS INFEASIBLE

A CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and explain the reasons underlying the lead agency's determination [CEQA Guidelines Section 15126.6(c)]. No alternative was specifically rejected as being infeasible.

DESCRIPTION OF ALTERNATIVES

The following proposed alternatives were developed by modifying specific components of the proposed project. The rationale for selecting and modifying specific components of the proposed project to generate feasible alternatives for the analysis is based on CEQA's requirement to present "realistic" alternatives; that is, alternatives that can actually be implemented.

The initial analysis of the proposed project determined that, of the amendments proposed, only the components that pertain to the delayed compliance schedule to meet certain NOx emission limits could have potential adverse significant impacts during operation. As such, the following four alternatives were developed by identifying and modifying major components of the proposed project. The alternatives, summarized in Table 5-1 and described in the following subsections, include the following: Alternative A (No Project), Alternative B (More Stringent NOx Limit), Alternative C (Less Stringent Timing), and Alternative D (More Mitigation). Unless otherwise specifically noted, all other components of the project alternatives are identical to the components of the proposed project. The following subsections provide a brief description of each alternative.

Proposed Project (Alternative Compliance Option, Increased Mitigation Fee):

PAR 1111 intends to resolve the compliance issues by extending the compliance dates for residential and commercial fan-type central furnaces to comply with the NOx emission limits established in the September 2014 amendments to Rule 1111. Condensing, Non-condensing, Weatherized, and Mobile Home units are expected to comply with the applicable NOx emission limits and mitigation fee schedule set forth in PAR 1111. Recovery of the NOx emission reductions foregone are expected to occur starting in 2018 as older equipment gets replaced or retrofitted over time. Most NOx emission reductions foregone are expected to be recovered each year from compliance year 2018 to 2047.

Alternative A: No Project (Current Rule)

Alternative A, the no project alternative, means that the current version of Rule 1111 that was amended in September 2014 would remain in effect. Under the current version of Rule 1111, Condensing, Non-condensing, Weatherized, and Mobile Home units would have to comply with the applicable NOx emission limits from 2018 to 2022. Compliance with these NOx limits would result in NOx emission reductions occurring from 2018 through 2022. Under this alternative, however, suppliers cannot provide equipment that meets the applicable NOx emission limits, creating potential compliance issues for the manufacturers, distributors and installers. The originally projected NOx emission reductions will not be achieved if the September 2014 amendments to Rule 1111 remain in effect.

Alternative B: More Stringent NOx Limit Alternative (10 ng/J NOx Limit):

Under Alternative B, the NOx limit of 10 ng/J is more stringent than the 14 ng/J in the proposed project, PAR 1111. Condensing, Non-Condensing, Weatherized, and Mobile Home units would have to comply with emission limit starting in 2018. The compliance dates for the more stringent NOx limit would be equivalent to the compliance dates in the proposed project. Recovery of the NOx emission reductions foregone are expected to occur starting in 2018 as older equipment gets replaced or retrofitted over time. The NOx emission reductions foregone are expected to be recovered more quickly each year from compliance year 2018 to 2022.

Alternative C: Less Stringent Timing Alternative (Three Year Extension for Compliance Dates):

Under Alternative C, the NOx emission limit would remain the same as the proposed project. However, the compliance dates for all equipment types would be extended by three years from the existing Rule 1111, which is less stringent than the proposed compliance date extension in PAR 1111. Condensing, Non-Condensing, Weatherized, and Mobile Home units are expected to comply with applicable NOx emission limits over the applicable extended compliance period of three years starting in 2018. Recovery of the NOx emission reductions foregone are expected to occur starting in 2018 as older equipment gets replaced or retrofitted over time. The NOx emission reductions foregone are expected to be recovered each year from compliance year 2018 to 2024.

Alternative D: More Mitigation Alternative (Increased Mitigation Fees):

Under Alternative D, the NOx emission limit would remain the same as the proposed project. However, the mitigation fee for all equipment types would be increased to $500 per unit, which is more stringent than the proposed $400 mitigation fee in PAR 1111. Condensing, Non-Condensing, Weatherized, and Mobile Home units would still have to comply with the applicable NOx emission limits set forth in PAR 1111. Under Alternative D, the amount of NOx emission reductions foregone are expected to be equivalent to the proposed project and will occur starting in 2018 as older equipment gets replaced or retrofitted over time. The NOx emission reductions foregone are expected to be recovered each year from compliance year 2018 to 2024.

COMPARISON OF ALTERNATIVES

The following sections describe the potentially significant adverse operational air quality impacts that may occur for each project alternative. Potentially significant adverse operational air quality impacts are quantified where sufficient data are available. A comparison of the environmental impacts for each project alternative is provided in Table 5-2. No other environmental topics other than operational air quality were determined to be significantly adversely affected by implementing any project alternative.

CONCLUSION

By not adopting PAR 1111, Alternative A would not delay any of the requirements in the current version of Rule 1111 to comply with the applicable NOx emission limits. Further, implementation of Alternative A will require the same amount of NOx emission reductions to occur as is currently required by Rule 1111. However, Alternative A would not achieve the project objectives for the proposed project because there is limited availability of compliant equipment on the market that

is able to comply with the current NOx emission limits by the applicable compliance dates. This problem is further exacerbated because the non-compliant equipment would no longer be able to be sold or installed in the SCAQMD. Implementing Alternative A means that there will be no delay in requiring manufacturers to make compliant units available and in turn, obtaining NOx emission reductions and the corresponding health benefits that result from the NOx emission reductions. However, because there is no equipment currently available on the market that is able to comply with the current NOx emission limits by the applicable compliance dates, these environmental benefits will not actually occur if Alternative A is selected. Instead, the baseline of NOx emissions currently generated by the affected furnaces will remain unchanged and no NOx emission reductions will occur. In addition, because non-compliant equipment may no longer be sold or installed, the owner may elect to repair a furnace instead of replacing it with low NOx emitting equipment, thus continuing to emit NOx at baseline levels.

If Alternative B were implemented, more stringent NOx emission limits than those in the proposed project would apply to the applicable equipment. The compliance dates for achieving the more stringent NOx emission limits would be equivalent to the compliance dates in the proposed project. If Alternative B is implemented, the environmental impacts (e.g., NOx emission reductions foregone) will be less significant than the proposed project, however Alternative B is expected to result in lesser quantities of NOx emission reductions foregone over a shorter time frame than the proposed project. In addition, Alternative B presents a challenge for OEMs to achieve a lower NOx emission limit and make furnaces commercially available and achievable in widespread applications. For this reason, Alternative B is concluded to be the environmentally superior alternative. Similarly, because the NOx emission reductions foregone would occur over a shorter period of time, Alternative B is also determined to be the least toxic alternative.

If Alternative C is implemented, NOx emission reductions would be achieved from reducing NOx emissions over a longer period of time between compliance years 2018 and 2024. Alternative C extends the delay in NOx emission reductions as compared to the proposed project. For this reason, when compared to the proposed project, Alternative C provides fewer benefits to air quality and public health. Of the significant adverse operational air quality impacts that would be generated under Alternative C, the impacts would be more than the proposed project and more significant over a longer period of time.

If Alternative D were implemented, more NOx emission reductions and health benefits compared to the proposed project would be achieved from implementation of the emission reduction projects funded by the mitigation fee that would reduce NOx emissions overall beginning in compliance year 2018 and any year thereafter. However, NOx emission reductions would not be occurring concurrently with the foregone emission reductions as it takes time to select projects and implement. Under Alternative D, the NOx emission reductions foregone are expected to be as significant as the proposed project. Thus, under these conditions, the impacts from the Alternative D would be equivalent to the proposed project.

Thus, when comparing the environmental effects of the project alternatives with the proposed project and evaluating the effectiveness of achieving the project objectives of the proposed project versus the project alternatives, the proposed project provides the best balance in achieving the project objectives while minimizing the significant adverse environmental impacts to operational air quality, while not imposing an overwhelming financial burden on the OEMs.

APPENDIX A

PROPOSED AMENDED RULE 1111

(Adopted December 1, 1978)(Amended July 8, 1983)(Amended November 6, 2009)
(Amended September 5, 2014) (Preliminary Draft October 2017)

RULE 1111. REDUCTION OF NO_X EMISSIONS FROM NATURAL-GAS-FIRED, FAN-TYPE CENTRAL FURNACES

(a) Purpose and Applicability

The purpose of this rule is to reduce NOx emissions from ~~natural gas-fired,~~ fan-type central furnaces, as defined in this rule. This rule applies to manufacturers, distributors, sellers, and installers of residential and commercial fan-type central furnaces, requiring either single-phase or three-phase electric supply, used for comfort heating with a rated heat input capacity of less than 175,000 BTU per hour, or, for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour.

(b) Definitions

(1) ANNUAL FUEL UTILIZATION EFFICIENCY (AFUE) is defined in Section 10.1 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.

(2) BTU means British thermal unit or units.

(3) CONDENSING FURNACE means a high-efficiency furnace that uses a second heat exchanger to extract the latent heat in the flue gas by cooling the combustion gasses to near ambient temperature so that water vapor condenses in the heat exchanger, is collected and drained.

(4) FAN-TYPE CENTRAL FURNACE is a self-contained space heater using natural gas, or any fan-type central furnace that is in natural gas-firing mode, providing for circulation of heated air at pressures other than atmospheric through ducts more than 10 inches in length that have:

(A) a RATED HEAT INPUT CAPACITY of less than 175,000 BTU per hour; or

(B) for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour.

(5) HEAT INPUT means the higher heating value of the fuel to the furnace measured as BTU per hour.

(6) NOx EMISSIONS means the sum of nitrogen oxide and nitrogen dioxide (oxides of nitrogen) in the flue gas, collectively expressed as nitrogen dioxide.

(7) RATED HEAT INPUT CAPACITY means the gross HEAT INPUT of the combustion device.

(8) RESPONSIBLE OFFICIAL means:

(A) For a corporation: a president or vice-president of the corporation in charge of a principal business function or a duly authorized person who performs similar policy-making functions for the corporation, or

(B) For a partnership or sole proprietorship: general partner or proprietor, respectively.

(9) SINGLE FIRING RATE means the burners and control system are designed to operate at only one fuel input rate and the control system cycles burners between the maximum heat output and no heat output.

(10) USEFUL HEAT DELIVERED TO THE HEATED SPACE is the AFUE (expressed as a fraction) multiplied by the heat input.

(11) VARIABLE FIRING RATE means the burners and control system are designed to operate at more than one fuel input rate and the control system cycles burners between two or more heat output rates and no heat output.

(12) WEATHERIZED means designed for installation outside of a building, equipped with a protective jacket and integral venting, and labeled for outdoor installation.

(c) Requirements

(1) A manufacturer shall not, after January 1, 1984, manufacture or supply for sale or use in the South Coast Air Quality Management District ~~natural-gas-fired,~~ fan-type central furnaces, unless such furnaces meet the requirements of paragraph (c)(3).

(2) A person shall not, after April 2, 1984, sell or offer for sale within the South Coast Air Quality Management District ~~natural-gas-fired,~~ fan-type central furnaces unless such furnaces meet the requirements of paragraph (c)(3).

(3) ~~Natural-gas-fired,~~ F~~f~~an-type central furnaces shall:

(A) not emit more than 40 nanograms of oxides of nitrogen (calculated as NO_2) per joule of useful heat delivered to the heated space; and

(B) be certified in accordance with subdivision (d) of this rule.

(4) On or after October 1, 2012, a person shall not manufacture, supply, sell, offer for sale, or install, for use in the South Coast Air Quality Management District, ~~natural-gas-fired,~~ fan-type central furnaces subject to this rule, unless such furnace complies with the applicable emission limit and compliance date set forth in Table 1 and is certified in accordance with subdivision (d) of this rule.

Table 1 – Furnace NOx Limits and Compliance Schedule

Compliance Date	Equipment Category	NOx Emission Limit (nanograms/Joule *)
October 1, 2012	Mobile Home Furnace	40
April 1, 2015	Condensing Furnace	14
October 1, 2015	Non-condensing Furnace	14
October 1, 2016	Weatherized Furnace	14
October 1, 2018	Mobile Home Furnace	14

* Nanograms of oxides of nitrogen (calculated as NO_2) per joule of useful heat delivered to the heated space

(5) Any manufacturer of fan-type central furnaces regulated by this rule may elect to pay a per unit mitigation fee ~~of $200~~ for each condensing, ~~furnace and $150 for each~~ non-condensing, weatherized, or mobile home furnace distributed or sold into the SCAQMD according to the schedule set forth in Table 2, in lieu of meeting the 14 nanogram/Joule NOx emission limit in Table 1 of paragraph (c)(4) of this rule. ~~A manufacturer may elect to pay the per unit mitigation fee for a time period of no more than 36 months after the applicable compliance date in Table 1 of paragraph (c)(4).~~ A manufacturer shall submit an alternate compliance plan for each 12 month time period after the applicable compliance date during which the manufacturer elects to pay the mitigation fee in lieu of meeting the NOx emission limit.

Table 2 – Alternative Compliance plan mitigation fee schedule

Equipment Category	**Alternate Compliance Plan Period**		**Mitigation Fee**
	On and After	**End Date**	
Condensing Furnace	April 1, 2015	Date of Adoption	$200
	Date of Adoption	March 31, 2020	$400 ~~$400 - $500 (TBD)~~
Non-condensing Furnace	October 1, 2015	Date of Adoption	$150
	Date of Adoption	September 30, 2019	$400 ~~$400 - $500 (TBD)~~
Weatherized Furnace	October 1, 2016	Date of Adoption	$150
	Date of Adoption	September 30, 2021	$400 ~~$400 - $500 (TBD)~~
Mobile Home Furnace	October 1, 2018	September 30, 2022	$400 ~~$400 - $500 (TBD)~~

(A) Any manufacturer electing to comply using this mitigation fee option shall submit to the SCAQMD an alternate compliance plan no later than 60 days prior to the applicable compliance date that includes the following:

(i) a letter with the name of the manufacturer requesting the mitigation fee compliance option signed by a responsible official identifying the category of fan-type central furnaces and the 12 month alternate compliance period that the mitigation fees cover;

(ii) an estimate of the quantity of applicable Rule 1111 fan-type central furnaces to be distributed or sold into the SCAQMD during the alternate compliance period, which estimate shall be based on total distribution and sales records or invoices of condensing, non-condensing, weatherized or mobile home fan-type central furnaces that were distributed or sold into the SCAQMD during the 12 month period of July 1 to June 30 prior to the applicable compliance date, along with supporting documentation;

(iii) a completed SCAQMD Form 400A with company name, identification that application is for an alternate compliance plan (section 7 of form), identification that the request is for the Rule 1111 mitigation fee compliance option (section 9 of form), and signature of the responsible official;

(iv) a check for payment of the alternate compliance plan filing fee (Rule 306, section (c)).

(B) The manufacturer shall submit to the Executive Officer a report signed by the responsible official for the manufacturer identifying by model number the quantity of Rule 1111 fan-type central furnaces actually distributed or sold into SCAQMD and a check for payment of mitigation fees for the applicable 12 month alternate compliance period for the quantity of applicable Rule 1111 fan-type central furnaces distributed or sold into the SCAQMD during the alternate compliance period. The report and the payment of mitigation fees must be submitted to the SCAQMD no later than thirty (30) days after the end of each 12-month mitigation fee alternate compliance period.

(d) Certification

(1) The manufacturer shall have each appliance model tested in accordance with the following:

(A) Oxides of nitrogen measurements, test equipment, and other required test procedures shall be in accordance with AQMD Method 100.1.

(B) Operation of the furnace shall be in accordance with the procedures specified in Section 4.0 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.

(2) One of the two formulas shown below shall be used to determine the nanograms of oxides of nitrogen per joule of useful heat delivered to the heated space:

$$N = \frac{4.566 \times 10^4 \times P \times U}{H \times C \times E}, \qquad N = \frac{3.655 \times 10^{10} \times P}{(20.9-Y) \times Z \times E}$$

Where:

N = nanograms of emitted oxides of nitrogen per joule of useful heat.

P = concentration (ppm volume) of oxides of nitrogen in flue gas as tested.

U = volume percent CO_2 in water-free flue gas for stoichiometric combustion.

H = gross heating value of fuel, BTU/cu.ft. (60^oF, 30-in. Hg).

C = measured volume percent of CO_2 in water-free flue gas, assuming complete combustion and no CO present.

E = AFUE, percent (calculated using Table 2).

Y = volume percent of O_2 in flue gas.

Z = heating value of gas, joules/cu. meter (0.0^oC, 1 ATM).

(3) At least 120 days prior to the date a furnace model is first shipped to a location in the AQMD for use in the District, the manufacturer shall submit to the Executive Officer the following:

(A) A statement that the model is in compliance with subdivision (c). (The statement shall be signed by a responsible official and dated, and shall attest to the accuracy of all statements.)

(B) General Information

(i) Name and address of manufacturer.

(ii) Brand name.

(iii) Model number, as it appears on the furnace rating plate.

(C) A description of the furnace and specifications for each model being certified.

(D) Executive Officer approved emission test protocol and emission test results verifying compliance with the applicable NOx limit specified in Table 1.

(e) Identification of Compliant Units

(1) The manufacturer of the furnace complying with subdivisions (c) and (d) shall display the following on the shipping container label and rating plate of the furnace:

(A) Model number;

(B) Heat input capacity;

(C) Applicable NOx emission limit in Table 1; and

(D) Date of manufacture or date code.

(2) Any non-certified furnace shipped to a location in the South Coast Air Quality Management District for distribution or sale outside of the District shall have a label on the shipping container identifying the furnace as not certified for use in the District.

(f) Enforcement

The Executive Officer may periodically conduct such tests as are deemed necessary to ensure compliance with subdivision (c), (d), (e), and (h).

(g) Exemptions

(1) The provisions of this rule shall not apply to furnaces installed in mobile homes before October 1, 2012.

(2) For furnaces manufactured, purchased, and delivered to the South Coast Air Quality Management District prior to the applicable compliance date in Table 1, any person may, until 300 days after the applicable compliance date, sell, offer for sale, or install such a furnace in the District, so long as the furnace meets the requirements of paragraph (c)(3) and subdivisions (d) and (e).

~~(h) Rebate Incentives for Early Compliance~~

~~Any manufacturer of natural gas-fired, fan-type central furnaces subject to this rule that distributes and sells into the District furnaces that comply with the 14 nanograms/Joule emission limit 90 days prior to the applicable compliance date in Table 1 of paragraph (c)(4) may submit a compliance plan for early compliance to the Executive Officer and to receive on a first-come first-served basis from the AQMD a rebate payment of $75 for each 14 nanograms/Joule certified furnace and $90 for each high efficiency 14 nanograms/Joule certified furnace with AFUE of 90% or greater distributed and sold into the District, provided funds are available on the date documentation on the number of units distributed and sold is submitted to the AQMD. Total rebate payments to all manufacturers shall not exceed $3,000,000.~~

~~(i) Technology Assessment~~

~~On or before April 1, 2013, the Executive Officer shall conduct a technology assessment and shall report to the Governing Board on the status of manufacturers'~~

~~progress towards compliance with the 14 nanograms/Joule emission limit for nitrogen oxides.~~

APPENDIX B

CEQA IMPACT EVALUATION

Appendix B

CEQA IMPACT EVALUATIONS - PAR 1111

(12/22/2017)

Rule 1111 - 2014 Compliance After Mitigation

2014 Rule 1111 Emission Reduction Calculations (Tons per day [T/d])

		2012 Baseline (T/d))	Baseline Used (T/d))	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
		9.51	**9.51**																					
% Mobile		4	%	0.004	0.008	0.013	0.017	0.021	0.025	0.030	0.034	0.038	0.042	0.046	0.051	0.055	0.059	0.063	0.068	0.072	0.076	0.080	0.085	0.089
													0.007	0.014	0.020	0.027	0.034	0.041	0.047	0.054	0.061	0.068	0.074	0.081
% Condensing		15	%							0.031	0.072	0.113	0.155	0.196	0.237	0.278	0.319	0.361	0.402	0.443	0.484	0.525	0.567	0.608
% Non-Condensing		71	%							0.049	0.244	0.439	0.634	0.829	1.024	1.219	1.414	1.609	1.804	1.999	2.194	2.389	2.585	2.780
% Weatherized		10	%								0.007	0.034	0.062	0.089	0.117	0.144	0.172	0.199	0.227	0.254	0.282	0.309	0.337	0.364
Total Reduction (T/d)		**100**	**%**	**0.004**	**0.008**	**0.013**	**0.017**	**0.021**	**0.025**	**0.109**	**0.357**	**0.625**	**0.899**	**1.174**	**1.449**	**1.724**	**1.998**	**2.273**	**2.548**	**2.822**	**3.097**	**3.372**	**3.647**	**3.921**

Notes:

1. Source of data is from 2012 AQMP Source Category Emissions, August 2014 Rule 1111 Amendment, SoCal Gas Inventory Data, 2010 Census Data, and Ernest Orlando Lawrence Berkeley National Laboratory

PAR 1111 - Emissions Delay from 2014 to 2017

2017 PAR 1111 Emission Reduction Calculations (Tons per day [T/d])

		2012 Baseline (T/d))	Baseline Used (T/d))	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
		9.51	**9.51**																					
% Mobile		4	%	0.004	0.008	0.013	0.017	0.021	0.025	0.030	0.034	0.038	0.042	0.046	0.051	0.055	0.059	0.063	0.068	0.072	0.076	0.080	0.085	0.089
														0.007	0.014	0.020	0.027	0.034	0.041	0.047	0.054	0.061	0.068	0.074
% Condensing		15	%								0.010	0.052	0.093	0.134	0.175	0.216	0.258	0.299	0.340	0.381	0.422	0.464	0.505	0.546
% Non-Condensing		71	%								0.049	0.244	0.439	0.634	0.829	1.024	1.219	1.414	1.609	1.804	1.999	2.194	2.389	2.585
% Weatherized		10	%									0.007	0.034	0.062	0.089	0.117	0.144	0.172	0.199	0.227	0.254	0.282	0.309	0.337
Total reduction		**100**	**%**	**0.004**	**0.008**	**0.013**	**0.017**	**0.021**	**0.025**	**0.030**	**0.093**	**0.340**	**0.608**	**0.883**	**1.158**	**1.432**	**1.707**	**1.982**	**2.257**	**2.531**	**2.806**	**3.081**	**3.356**	**3.630**

Emission Delay (2014 Rule 1111 - 2017 PAR 1111) (T/d))				**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.080**	**0.264**	**0.284**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**	**0.291**

Notes:

1. Source of data is from 2012 AQMP Source Category Emissions, August 2014 Rule 1111 Amendment, OEMs, SoCal Gas Inventory Data, 2010 Census Data, and Ernest Orlando Lawrence Berkeley national Laboratory
2. PAR 1111 proposes to extend the compliance option by 1.5 years for condensing units and 1 year for non-condensing, weatherized, and mobile home units
3. An equipment lifetime of 20 to 25 years was assumed

PAR 1111 - Emissions Reductions Foregone

2016 AQMP Attainment Goal Years (8-Hour Ozone)	2014 Emissions	2017 Emissions	Emission Delay	Foregone Emissions (T/d) - 20 Years	Foregone Emissions (T/d) - 25 Years
2018	0.11	0.03	0.08	0.09	0.07
2023	1.45	1.16	0.29	0.33	0.26
2031	3.65	3.36	0.29	0.33	0.26

Note:

1. The equipment lifetime was averaged between 20 and 25 years for a average equipment lifetime of 22.5 years

APPENDIX C

REFERENCES

REFERENCES

REFERENCES

California Environmental Quality Act (CEQA) Guidelines, codified at Title 14 California Code of Regulations, Section15000 et seq.

California Health and Safety Code Sections 40440(a), 40460(a), 40462, 40910, 40913, 40914, 40920.5, 41700, and 44390 et seq.

Lewis-Presley Air Quality Management Act, The, 1976 Cal. Stats., ch 324 (codified at Health and Safety Code, Sections 40400-40540).

Public Resources Code, Section 21000 et seq.

SCAQMD, 2016. Final 2016 Air Quality Management Plan. March 2017. http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp.