SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Subsequent Environmental Assessment for:

Proposed Amended Rule 1110.2 - Emissions From Gaseous-and Liquid-Fueled Engines

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PREFACE

This document constitutes the Final Subsequent Environmental Assessment (SEA) for Proposed Amended Rule 1110.2 - Emissions from Gaseous- and Liquid-Fueled Engines. The Draft SEA was released for a 45-day public review and comment period from March 29, 2016 to May 13, 2016, which identified the topic of air quality and greenhouse gas emissions as exceeding the SCAQMD's significance thresholds associated with implementing the proposed project. No comment letters were received during the public comment period.

Subsequent to release of the Draft SEA, minor modifications were made to the proposed project. To facilitate identification, modifications to the document are included as underlined text and text removed from the document is indicated by ~~strikethrough~~.

Staff has reviewed the modifications to the proposed project and concluded that none of the revisions constitute: 1) significant new information; 2) a substantial increase in the severity of an environmental impact; or, 3) provide new information of substantial importance relative to the draft document. In addition, revisions to the proposed project would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the document pursuant to CEQA Guidelines §15073.5 and §15088.5. Therefore, this document now constitutes the Final SEA for the proposed project.

CHAPTER 1

INTRODUCTION AND EXECUTIVE SUMMARY

INTRODUCTION

The California Legislature adopted the Lewis-Presley Air Quality Act in 1976, which created the South Coast Air Quality Management District (SCAQMD) from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The agency was charged with developing uniform plans and programs for the South Coast Air Basin (Basin) to attain federal air quality standards by the dates specified in federal law. While the Basin has one of the worst air quality problems in the nation, there have been significant improvements in air quality in the Basin over the last three decades. Still, some air quality standards are exceeded relatively frequently, and by a wide margin. The agency was also required to meet state standards by the earliest date achievable through the use of reasonably available or all feasible control measures.

Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines limits emissions of nitrogen oxides (NOx), volatile organic compounds (VOCs) and carbon monoxide (CO) from the combustion of gaseous and liquid fueled engines. This rule applies to engines that are operating in the SCAQMD and that are rated more than 50 rated brake horsepower (bhp). The rule was adopted in 1990 and amended in 2012 to establish an effective date of January 1, 2016 for owners and operators of biogas engines to meet the emission limits that all other engines under this rule were required to meet by July 1, 2011.

SCAQMD staff's recent evaluation of the state of compliance with Rule 1110.2, as well as feedback from the affected industry, revealed that some equipment owners/operators are experiencing compliance challenges, in particular, with certain effective dates in the rule. Based on this information, in December 2015, the SCAQMD Governing Board amended Rule 1110.2 to delay implementation of NOx, VOC, and CO emission limit compliance dates until 2018 for biogas engines because some control technologies have not matured in a timely manner. The delayed emission reductions were greater than the SCAQMD's CEQA significance thresholds, thus the air quality impacts were considered significant. However, all delayed emission reductions will be recaptured over time, so the impacts are not permanent. Limits were also adopted on the number of breakdowns and excess emissions during breakdown events in order to be consistent with the EPA's breakdown provisions and to allow the rule to be included in the State Implementation Plan (SIP). A Final Subsequent Environmental Assessment (SEA) was certified on December 4, 2015 that analyzed all potential environmental impacts resulting from the proposed 2015 amendments to Rule 1110.2.

The proposed project consists of amending Rule 1110.2, which would provide the facility operator of MM PRIMA DES<u>H</u>ECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, relief from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022. This Final SEA is being prepared because a small portion of the emission reductions foregone (emissions from this one facility) that were previously analyzed in the December 2015 SEA would be extended from 2017~~8~~ until 2022; therefore, the increased severity of the impact was not previously disclosed.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The proposed amendments to Rule 1110.2 are considered a "project" as defined by CEQA. CEQA requires that the 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's 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.

California Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written documents in lieu of an 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 is codified as SCAQMD Rule 110. Pursuant to Rule 110 (the rule which implements the SCAQMD's certified regulatory program), SCAQMD is preparing a Final SEA to evaluate potential adverse impacts from the proposed project. Pursuant to CEQA Guidelines §15162(a)(1), this Final SEA is being prepared because a small portion of the emission reductions foregone that were previously analyzed in the December 2015 SEA would be extended from 2017~~8~~ until 2022; therefore, the increased severity of the impact was not previously disclosed. Accordingly, a SEA is the appropriate CEQA document to prepare for the proposed project. The proposed project is a modification of the most recent project (December 2015 Final SEA, certified on December 4, 2015) and this analysis considers only the incremental effects of the currently proposed project. This Final SEA focuses on air quality and greenhouse gas emissions as areas that may be adversely affected by the proposed project, as the proposed amendments do not affect the other environmental topic areas. Prior to making a decision on the adoption of the proposed amendments to Rule 1110.2, the SCAQMD Governing Board must review and certify the Final SEA as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting the proposed amendments to Rule 1110.2.

PAST CEQA DOCUMENTATION FOR RULE 1110.2

Rule 1110.2, like other SCAQMD rules and regulations, comprises a regulatory program that changes over time due to advances in technology, regulatory requirements adopted by state and federal agencies, advances in technology not occurring as anticipated, and other reasons. To reflect these changes, Rule 1110.2 has been amended a number of times since its original adoption in 1990. The following subsections describe the type of CEQA documents prepared for past amendments to Rule 1110.2 and summarize the modifications and analyses prepared for those documents. This Final SEA focuses on the currently proposed amendments to Rule 1110.2 and relies on the previously prepared December 2015 Final SEA, the August 2012 Addendum to the 2007 Final EA, and the December 2007 Final EA, as described below.

Final SEA for Proposed Amended Rule 1110.2; December 2015: In December 2015, the SCAQMD amended Rule 1110.2 to delay implementation of NOx, VOC, and CO emission limits compliance dates for biogas engines because some control technologies have not matured in a timely manner. The delayed emission reductions were greater than the SCAQMD's CEQA significance thresholds, thus the air quality impacts were considered significant. However, all delayed emission reductions will be recaptured over time, so the impacts are not permanent. Limits were also adopted on the number of breakdowns and excess emissions during breakdown events

in order to be consistent with the EPA's breakdown provisions and to allow the rule to be included in the State Implementation Plan (SIP). This document can be obtained by visiting the following website: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/par-1110_2-final-sea.pdf

Addendum to the 2007 Final EA for Proposed Amended Rule 1110.2 – Emissions from Gaseous - and Liquid-Fueled Engines; August 2012: An addendum was prepared for the 2012 amendments to Rule 1110.2. This action made certain limits effective that were already adopted and analyzed in a CEQA document for the amendments to Rule 1110.2 adopted in 2008, which established new exhaust emission concentration limits for landfill and digester gas-fired engines to take effect July 1, 2012. These limits did not take effect because they were contingent upon completion of a technology assessment by July 2010. Except for CO, the emission standards would be equivalent to the current best available control technology (BACT) for NOx and VOC for new internal combustion engines (ICE). Among the engines affected by the 2012 amendments were approximately 55 engines that are fired by landfill or digester gas (biogas), located at 13 public and private landfills and wastewater treatment plants. The SCAQMD concluded that the amendments would not change the environmental analysis or conclusions in the previously certified December 2007 Final EA. Pursuant to CEQA Guidelines §15164 (c), it was not necessary to circulate the Addendum for public review. The Addendum to the 2012 Final EA was certified by the SCAQMD Governing Board on September 7, 2012. This document can be obtained by visiting the following website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2012/addendum-to-the-2007-final-environmental-assessment-for-proposed-amended-rule-1110-2.pdf

Final EA for Proposed Amended Rule 1110.2; December 2007: These amendments to Rule 1110.2 were to further reduce NOx, VOC and CO emissions from gaseous- and liquid-fueled ICEs. PAR 1110.2 partially implemented the 2007 AQMP Control Measure MCS-01 – Facility Modernization, which prescribed facilities to retrofit or replace their equipment to achieve emission levels equivalent to BACT. The amendments affected stationary, non-emergency engines and increased monitoring requirements; reduced the emission standards equivalent to the current BACT; required new electrical generating engines to meet the same requirements as large central power plants; and clarified portable engine requirements. The analysis showed that there were potential adverse environmental effects for the topic areas of air quality, hazards and hazardous materials, and solid/hazardous wastes. The CEQA document was released for a 45-day public review and comment period from November 2, 2007 to December 18, 2007. One public comment letter was received and responses were prepared. Some of the significant adverse impacts were mitigated to less than significant and a mitigation monitoring plan was prepared. After circulation of the Draft EA, a Final EA was prepared and certified by the SCAQMD Governing Board on February 1, 2008. This document can be obtained by visiting the following website: http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/aqmd-projects---year-2008/fea-for-par-1110-2

Final EA for Proposed Amended Rule 1110.2, June 2005: A Draft EA for the proposed Rule 1110.2 was released for a 30-day public review period from March 18, 2005, to April 19, 2005. Proposed amendments to Rule 1101.2 included: removing an exemption for all agricultural engines except emergency standby engines and engines powering orchard wind machines; adding more

recordkeeping requirements; prohibiting use of portable engine generators to supply power to the grid or to a building, facility, stationary source or stationary equipment except in an emergency affecting grid stability; and removing outdated rule language. Rule 1110.1 was rescinded because it is superseded by the requirements of Rule 1110.2. After circulation of the Draft EA, a Final EA was prepared and certified by the SCAQMD Governing Board on June 3, 2005.

Final Subsequent EA for the Proposed Amended Rule 1110.2, November 14, 1997: Proposed amendments were made to address portable engine requirements under Rule 1110.2 and CARB's Statewide Portable Engine and Equipment Registration Regulation. Significant adverse impacts were identified and evaluated for the topic areas of air quality and energy. The Draft SEA was released for a 45-day public review and comment period from September 10, 1997 to October 28, 1997. No comments were received from the public.

Notice of Exemption (NOE) for the Proposed Amended Rule 1110.2, December 9, 1994: The proposed amendments clarified the meaning of the terms "originally installed" for purposes of determining compliance with the rule. A NOE was prepared for proposed amended Rule 1110.2, because the proposed amendments were administrative in nature and had no significant adverse impacts on the environment.

Notice of Exemption (NOE) for the Proposed Amended Rule 1110.2, August 12, 1994: The proposed amendments clarified the original intent that continuous in-stack CO monitoring system is not required if a continuous in-stack NOx monitoring system is not required. The proposed amendments harmonized monitoring requirements in Rule 1110.2 and RECLAIM.

Final EA for Proposed Rule 1110.2, September 7, 1990: The Governing Board requested that staff examine issues raised during the adoption hearing for Rule 1110.2 and provide recommendations. Clarification of monitoring and periodic emission testing for engines over 1,000 bhp was added for NOx and CO emissions. A limited exemption was proposed for up-slope units at winter resort facilities that are operated less than 700 hours per year. Since the circumstances of the original project and the modifications were essentially the same, the Final EA for Proposed Rule 1110.2 was recertified for these changes.

Final EA for Proposed Rule 1110.2, August 3, 1990: A Draft EA for the proposed rule was released for a 45-day public review period from May 25, 1990, to July 25, 1990. Four comment letters were received and responses were prepared. The EA identified potential impacts and mitigation measures for the environmental topic areas of water quality, risk of upset, transportation, energy, solid waste disposal, and human health. Significant adverse impacts were mitigated to less than significant through the development of a mitigation monitoring plan.

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 environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines §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 Final 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.

AREAS OF CONTROVERSY

In accordance with CEQA Guidelines §15123 (b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in the CEQA document. The following discussion identifies potential areas of controversy relating to PAR 1110.2.

Need for Relief: One biogas facility has raised concerns with meeting the Rule 1110.2 requirements because they are currently operating under an existing Power Purchase Agreement (PPA) and plan to permanently remove all of their existing equipment at the termination of the agreement. On this basis, SCAQMD Staff is proposing to amend Rule 1110.2, which would provide the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, relief from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022.

Due to this proposed provision, the proposed project will result in a delay of: 0.07 tons/day of NOx, 0.01 tons/day of VOC, and 0.08 tons/day of CO emission reductions from 2017 to 2022 (Table 1-1). Nonetheless, a portion of these ~~delayed~~ foregone emission reductions will be recaptured in compliance year 2022, six years from the original compliance date. There is currently only one facility in the SCAQMD's jurisdiction that would meet this proposed criteria.

Table 1-1
PAR 1110.2 ~~Delayed~~ Foregone Emission Reductions

Type of Project	*NOx (tpd)*	*VOC (tpd)*	*CO (tpd)*
Provide MM PRIMA DESHECHA ENERGY facility relief from the emissions requirements specified in Table III-B of Rule 1110.2	0.07	0.01	0.08

EXECUTIVE SUMMARY

Chapter 2 – Project Description and Project Objectives

The proposed project consists of amending Rule 1110.2, which would provide the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, relief from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022.

The project objectives are as follows:

- Provide relief for the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has met specific criteria;
- Maintain the lower limits on NOx, VOC, and CO emissions from the combustion of gaseous and liquid biogas engines; and
- Aside from temporary air quality impacts, avoid generating any new adverse environmental impacts.

Chapter 3 – Existing Setting

Pursuant to the CEQA Guidelines §15125, Chapter 3 – Existing Setting, includes descriptions of those environmental areas that could be adversely affected by the proposed project. The following subsection briefly highlights the existing setting for the topic of air quality which has been identified as having potentially significant adverse effects from implementing the proposed project.

Air Quality

This section provides an overview of air quality in the District whose region could be affected by the proposed project. Air quality in the area of the SCAQMD's jurisdiction has shown substantial improvement over the last three decades. Nevertheless, some federal and state air quality standards are still exceeded frequently and by a wide margin. Of the National Ambient Air Quality Standards (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 for carbon monoxide, PM10, sulfur dioxide, and nitrogen dioxide standards. Air monitoring for PM10 indicates that SCAQMD has attained the NAAQS and the USEPA published approval of SCAQMD's PM10 attainment plan on June 26, 2013, with an implementation date of July 26, 2013. Effective December 31, 2010, the Los Angeles County portion of the SCAQMD has been designated as non-attainment for the new federal standard for lead, based on emissions from two specific facilities. While there has been no recent exceedances of the lead NAAQS, the area has not yet been redesignated as "attainment". 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. In addition, this section includes a discussion on toxic air contaminants (TACs), greenhouse gas (GHG) emissions, and climate change.

Chapter 4 – Environmental Impacts

The CEQA Guidelines require environmental documents to identify significant environmental effects that may result from a proposed project [CEQA Guidelines §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 following subsection briefly highlights the environmental impacts and mitigation measures for the topic of air quality which has been identified as having potentially significant adverse effects from implementing the proposed project.

Air Quality

This section provides an overview of the potential adverse air quality emissions impacts from the proposed project. The initial evaluation in the July 2015 NOP/IS identified the topic of air quality as potentially being adversely affected by the proposed project. The proposed project consists of amending Rule 1110.2, which would provide the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, relief from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022. For the purposes of this analysis, the affected equipment consists of biogas engines. Due to the fact that this facility has entered into a Power Purchase Agreement (PPA), and the affected equipment is scheduled to be removed permanently by 2022, the proposed project would provide relief for the specific affected equipment from Rule 1110.2.

At this time, PAR 1110.2 impacts only one biogas facility located in the SCAQMD jurisdiction. The proposed project will ~~delay the~~ result in additional emissions foregone from 2017 to 2022 that were not previously analyzed in the December 2015 Final SEA ~~from 2018 until 2022~~. There are no construction-related activities associated with the proposed project, and therefore, no construction-related impacts are expected to occur. Additionally, since GHG emissions are based on fuel usage, the GHG emissions will remain the same no matter the type of combustion source.

~~NOx, VOC, and CO emission reductions for~~ PAR 1110.2 ~~would be delayed and~~ would result in approximately 0.07 tons/day of NOx, 0.01 tons/day of VOC, and 0.08 tons/day of CO emissions foregone from 2017 to 2022. However, a portion of these ~~delayed~~ foregone emission reductions will be recaptured in compliance year 2022. The quantity of ~~delayed~~ foregone NOx emission reductions exceeds the SCAQMD CEQA significance thresholds. Thus, PAR 1110.2 will result in adverse significant operational air quality impacts. The air quality analysis presented in Chapter 4 represents a "worst-case" analysis and accounts for these potential additional ~~delays in~~ foregone emission reductions.

There are no feasible mitigation measures that have been identified at this time that would reduce or eliminate the expected ~~delays in~~ foregone emission reductions. Consequently, the operational air quality emissions impacts from the proposed project cannot be mitigated to less than significant.

Chapter 5 – Alternatives

The proposed project and three alternatives to the proposed project are summarized below in Table 1-2: Alternative A (No Project), Alternative B (Replace Flares) and Alternative C (New Micro Turbines). Pursuant to CEQA Guidelines §15126.6 (b), the purpose of an alternatives analysis is to reduce or avoid potentially significant adverse effects that a project may have on the environment. The environmental topic area identified in the Final SEA that may be adversely affected by the proposed project was air quality impacts. A comprehensive analysis of air quality impacts is included in Chapter 4 of this document. In addition to identifying project alternatives, Chapter 5 provides a comparison of the potential operational impacts to air quality emissions from each of the project alternatives relative to the proposed project, which are summarized in Table 1-3. Aside from these topics, no other potential significant adverse impacts were identified for the

proposed project or any of the project alternatives. As indicated in the following discussions, the proposed project is considered to provide the best balance between meeting the objectives of the project while minimizing potentially significant adverse environmental impacts.

Table 1-2
Summary of PAR 1110.2 and Project Alternatives

Project	Project Description
Alternative A (No Project)	The proposed project would not be adopted and the current universe of equipment at biogas facilities will continue to be subject to the NOx, VOC and CO emission limits according to the current compliance schedule in Rule 1110.2. If facilities cannot comply with the existing rule, operators may shut down their biogas engines and release their gas through their existing flares. The facilities would purchase more electricity.
Alternative B (Replace Flares)	Through additional rulemaking, biogas facilities not meeting the current Rule 1110.2 biogas emission limits would be required to process the biogas through new cleaner and efficient flares under a separate rule. The new flares' emissions would be lower than the NOx, CO, and VOC emissions of the proposed project. GHG emissions would increase from power plants needed to generate electricity that would otherwise be generated from the biogas engines and backup diesel engines. All other requirements and conditions in the proposed project would be applicable.
Alternative C (New Micro Turbines)	Through additional rule making, biogas facilities not meeting the current Rule 1110.2 biogas emission limits would be required to process the biogas through new micro turbines to handle their facilities' biogas under a separate rule. The new microturbine emissions would be comparable to the NOx, CO, and VOC emissions of the proposed project. GHG emissions would increase from backup diesel engines. All other requirements and conditions in the proposed project would be applicable.

Table 1-3
Comparison of Environmental Impacts of the Alternatives

Category	Proposed Project	Alternative A: No Project	Alternative B: Replace Flares	Alternative C: New Micro Turbines
Air Quality Impacts: Construction	This proposed amendment does not have any construction impacts.	No construction impacts.	Minor construction impacts associated with replacing flares.	Minor construction impacts associated with installing new micro turbines.
Significant?	No	No	No	No
Air Quality Impacts: Operation	Approximately 0.07 tons of NOx, 0.01 tons/day of VOC, and 0.08 tons/day of CO peak daily emission reductions foregone ~~delayed~~; ~~emission reductions are not permanent will be recaptured in compliance year 2022;~~ emissions foregone ~~from the temporary delay~~ would exceed the SCAQMD CEQA significance thresholds for operation.	Fewer emissions than proposed project due to no ~~delay in~~ emission reductions foregone; however, no co-benefit of electricity production because biogas engines would not be able to meet current limits and would likely shut down; there would be additional emissions from power plants and backup engines; thus, these emissions would still exceed the SCAQMD CEQA significance thresholds for operation.	Due to the new flares being more efficient in combustion than the biogas engines, there would be less NOx, VOC and CO emissions than the proposed project; there would be additional emissions from power plants and backup engines; thus, these emissions would still exceed the SCAQMD CEQA significance thresholds for operation.	Due to the new microturbines being more efficient in combustion than the biogas engines, there would be slightly less NOx and CO emissions than the proposed project; there would be an increase in VOC emissions compared to the proposed project; there would be additional emissions from backup engines; thus, these emissions would still exceed the SCAQMD CEQA significance thresholds for operation.
Significant?	Yes	Yes	Yes	Yes

Category	Proposed Project	Alternative A: No Project	Alternative B: Replace Flares	Alternative C: New Micro Turbines
Air Quality Impacts: GHG	None; since GHG emissions are based on fuel usage, the GHG emissions will remain the same no matter the type of combustion source.	Same as proposed project	GHG emissions would increase from power plants and back up diesel engines; however the emissions are less than the SCAQMD CEQA significance threshold for GHG.	GHG emissions would increase from back up diesel engines; however, the emissions are less than the SCAQMD CEQA significance threshold for GHG.
Significant?	No	No	No	No

Appendix A – Proposed Amended Rule 1110.2
Appendix A contains a complete version of Proposed Amended Rule 1110.2.

Appendix B – Assumptions and Calculations
Appendix B contains the assumptions and calculations for Alternatives B and C.

CHAPTER 2

PROJECT DESCRIPTION

Project Location

Project Background

Project Description

Project Objectives

PROJECT LOCATION

The SCAQMD has jurisdiction over an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The Basin, which is a sub area of the 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. The 6,745 square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portions of the SSAB and MDAB are bounded by the San Jacinto Mountains to the west and span eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a sub region of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east. The SCAQMD's jurisdictional area is depicted in Figure 2-1. The proposed project would be in effect in the entire area of the SCAQMD's jurisdiction, however, the one facility that is expected to be covered by the proposed rule amendment is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675.

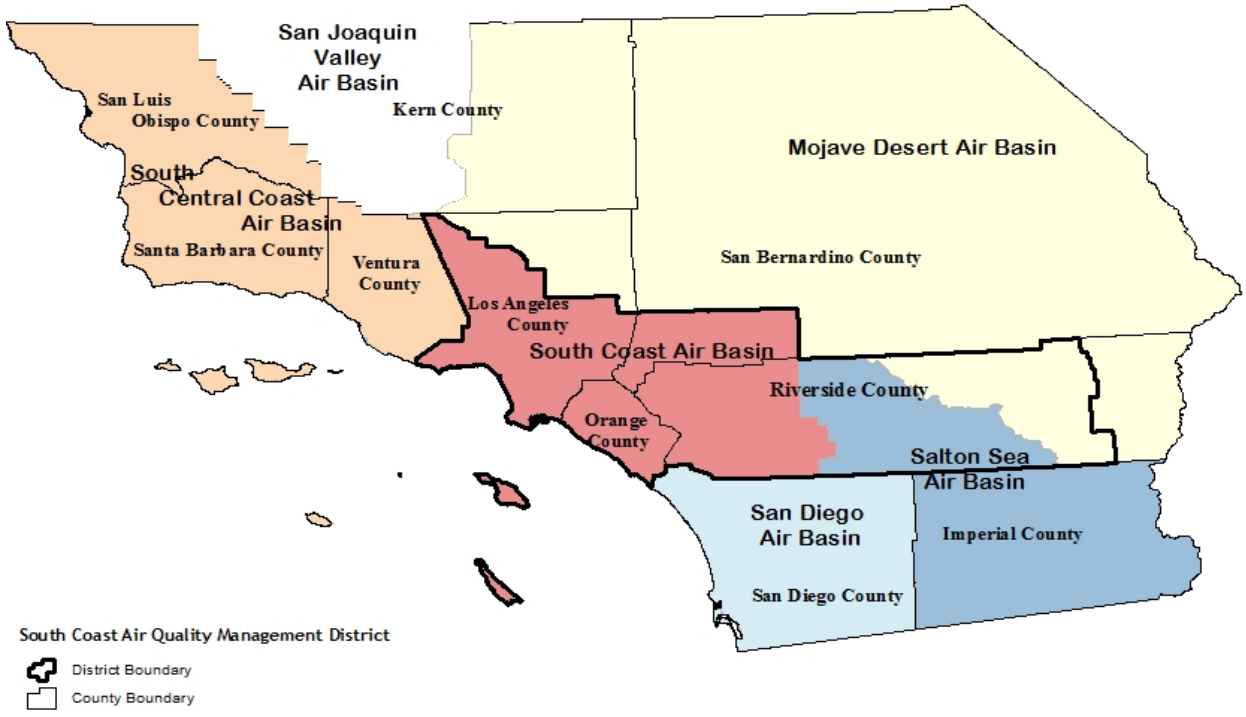

Figure 2-1
South Coast Air Quality Management District Boundaries

PROJECT BACKGROUND

Rule 1110.2 – Emissions from Gaseous- and Liquid-Fired Engines was adopted by the AQMD Governing Board on August 3, 1990. It required that either 1) NOx emissions be reduced over 90% to one of two compliance limits specified by the rule, or; 2) the engines be permanently removed from service or replaced with electric motors. It was amended in September 1990 to clarify rule language and then amended in August and December of 1994 to modify the CO monitoring requirements and to clarify rule language. The amendment of November 1997 eliminated the requirement for continuous monitoring of CO, reduced the source testing requirement from once every year to once every three years, and exempted non-road engines, including portable engines, from most requirements. The amendment in June 2005 made the previously exempt agricultural engines subject to the rule.

To address widespread non-compliance with stationary IC engines, the 2008 amendment augmented the source testing, continuous monitoring, inspection and maintenance (I&M), and reporting requirements of the rule to improve compliance. It also required stationary, non-emergency engines to meet emission standards equivalent to current BACT for NOx and VOC and almost to BACT for CO. This partially implemented the 2007 AQMP control measure for Facility Modernization (MCS-001). Additionally, the 2008 amendment required new electric generating engines to limit emissions to levels nearly equivalent to large central power plants, meeting standards that are at or near the CARB 2007 Distributed Generation Emissions Standards. It also clarified the status for portable engines and set emissions standards for biogas engines to become effective on July 1, 2012 if the July 2010 Technology Assessment confirmed that the rule limits could be achieved.

The 2008 adopting resolution included commitments directing staff to conduct a Technology Assessment to address the availability, feasibility, cost-effectiveness, compliance schedule, and global warming impacts of biogas engine control technologies and report back to the Governing Board no later than July 2010. Additionally, the Governing Board directed that the July 2012 biogas emission limits would not be incorporated into the SIP unless the July 2010 Technology Assessment found that the proposed limits are achievable and cost-effective.

At the July 2010 Governing Board meeting, staff presented an Interim Technology Assessment to address the board resolution commitments in 2008. The Interim Technology Assessment summarized the biogas engine control technologies to date and the status of on-going demonstration projects. Due to the delays caused by the permit moratorium in 2009, the release of a subsequent report was recommended upon the completion of these projects. The Interim Technology Assessment concluded that feasible, cost-effective technology should be available that can support the feasibility of the July 2012 emission limits, but that the delay in the demonstration projects would likely necessitate an adjustment to the July 1, 2012 compliance date of Rule 1110.2.

Rule amendments in July 2010 added an exemption to the rule affecting a remote public safety communications site at Santa Rosa Peak in Riverside County which has limited accessibility in the wintertime.

The September 2012 amendments established a compliance date of January 1, 2016 for biogas engines. A compliance option was also provided so that operators requiring additional time would be given up to two years beyond the compliance date with the submittal of a compliance plan and payment of a compliance flexibility fee. In addition, SCAQMD staff presented an Assessment of Available Technology for Control of NOx, CO, and VOC Emissions from Biogas-Fueled Engines that detailed the different available technologies and demonstration projects for biogas engines, along with costs.

Due to the fact that some control technologies had not matured in a timely manner, in December 2015, Rule 1110.2 was amended to delay implementation of NOx, VOC, and CO emission limits compliance dates for biogas engines. However, all delayed emission reductions will be recaptured over time, so the emissions foregone are not permanent. Limits were also adopted on the number of breakdowns and excess emissions during breakdown events in order to be consistent with the EPA's breakdown provisions and to allow the rule to be included in the SIP.

PROJECT DESCRIPTION

The proposed project consists of amending Rule 1110.2. The purpose of the proposed project is to provide a biogas facility relief from emissions requirements specified in Table III-B of Rule 1110.2, provided they have met certain criteria. A copy of PAR 1110.2 can be found in Appendix A. The following is a summary of the key components of PAR 1110.2:

> The facility operator of MM PRIMA DES<u>H</u>ECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, would not be required to meet the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022.
>
> The plan shall:
>
> - Be submitted by July 1, 2016 and approved before the January 1, 2017 compliance date;
> - Include SCAQMD Form 400A with company name, SCAQMD Facility ID, and permit number for the subject equipment, and;
> - Include a filing fee payment pursuant to Rule 306.

The project would result in ~~a delay of~~ 0.07 tons per day of NOx reductions, 0.01 tons per day of VOC reductions, and 0.08 tons per day of CO reductions <u>foregone from 2017 to 2022</u>. However, <u>a portion of</u> these ~~delayed~~ <u>foregone</u> emission reductions will be recaptured in year 2022, six years from the original compliance date.

PROJECT OBJECTIVES

CEQA Guidelines §15124(b) requires the project description to include a statement of objectives sought by the proposed project, including the underlying purpose of the proposed project. Compatibility with project objectives is one criterion for selecting a range of reasonable project alternatives and provides a standard against which to measure project alternatives. The project

objectives identified in the following bullet points have been developed: 1) in compliance with CEQA Guidelines §15124 (b); and, 2) to be consistent with policy objectives of the SCAQMD's New Source Review program. The project objectives are as follows:

- Provide relief from the emissions requirements specified in Table III-B of Rule 1110.2 for the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022.;
- Maintain the lower limits on NOx, VOC, and CO emissions from the combustion of gaseous and liquid biogas engines;
- Aside from temporary air quality impacts, avoid generating any new adverse environmental impacts.

CHAPTER 3

EXISTING SETTING

Introduction

Air Quality and Greenhouse Gases

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 currently exists. The currently proposed project would extend the emission reductions foregone that were previously analyzed in the December 2015 Final SEA ~~from 2018 until 2022~~; therefore, increasing the severity of an impact that was not previously disclosed. Therefore, the environmental impacts previously analyzed in the 2015 Final SEA and the 2007 Final EA are still valid and air quality impacts are the only issue area analyzed herein. CEQA Guidelines §15360 defines "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" (see also Public Resources Code §21060.5). According to CEQA Guidelines §15125 (a), a CEQA document must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the NOP is published from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives.

The following section summarizes the existing setting for air quality and GHG emissions which is the only environmental topic identified that may be adversely affected by the proposed project. The Final Program EIR for the 2012 AQMP also contains comprehensive information on existing and projected environmental settings for the topic of air quality and GHG emissions. Copies of the referenced document are available from the SCAQMD's Public Information Center by calling (909) 396-2039 or available on the web at http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/aqmd-projects---year-2012/aqmp-2012.

AIR QUALITY AND GREENHOUSE GASES

This subchapter provides an overview of the existing air quality setting for each criteria pollutant and their precursors, as well as the human health effects resulting from exposure to these pollutants. In addition, this subchapter includes a discussion of non-criteria pollutants such as TACs and GHGs, and climate change.

Criteria Air Pollutants and Identification of Health Effects

It is the responsibility of the 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, carbon monoxide (CO), nitrogen dioxide (NO2), PM10, PM2.5, sulfur dioxide (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 commonly 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. SCAQMD also has a general responsibility pursuant to Health & Safety Code (HSC) §41700 to control emissions of air contaminants and prevent endangerment to public health.

Regional Baseline

Air quality in the area of the SCAQMD's jurisdiction has shown substantial improvement over the last three decades. Nevertheless, some federal and state air quality standards are still exceeded frequently and by a wide margin. Of the National Ambient Air Quality Standards (NAAQS) established for seven criteria pollutants (ozone, CO, NO2, PM10, PM2.5, SO2, and lead), the area within the SCAQMD's jurisdiction is only in attainment with CO, SO2, PM10 and the annual NO2 standards. The SCAQMD is designated as unclassifiable/attainment for the hourly NO2 standard. The EPA intends to redesignate areas after sufficient air quality data are available.

Recent air quality data shows the 1997 PM2.5 standard (15 $\mu g/m^3$) is being met, but falls short in attaining the 2012 annual PM2.5 standard of 12 $\mu g/m^3$. Recent monitoring data also shows that the 2006 24-hour NAAQS for PM2.5 will not be achieved by 2015, due partially to drought conditions and to excessive emissions. The upcoming 2016 AQMP will evaluate PM2.5 emissions and possible control measures to attain the 2006 and 2012 standards by 2019 - 2025. The 2016 AQMP will also demonstrate attainment of the 2008 8-hour ozone standard (75 ppb) by year 2032, and provide an update to the previous 1997 8-hour standard (80 ppb) to be met by 2023. The 2016 AQMP must be submitted to the USEPA by July 20, 2016.

In 2010, a portion of Los Angeles County was designated as not attaining the NAAQS of 0.15 $\mu g/m^3$ for lead. SCAQMD identified two large lead-acid battery recycling facilities as possible sources of lead. One of the facilities was the main contributor to the area's nonattainment status. In response to the nonattainment designation, the State submitted the *Final 2012 Lead State Implementation Plan – Los Angeles County* to the USEPA on June 20, 2012. The plan outlines steps that will bring the area into attainment with the standard. As of February 11, 2014, the USEPA announced in the Federal Register (FR) final approval of the lead air quality plan, effective 30 days after publication (e.g., March 12, 2014).

The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-1. The SCAQMD monitors levels of various criteria pollutants at 36 monitoring stations. The 2013 air quality data from SCAQMD's monitoring stations are presented in Table 3-2 for ozone, CO, NO2, PM10, PM2.5, SO2, lead and PM10 sulfate.

Table 3-1
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard [a]	Federal Primary Standard [b]	Most Relevant Effects
Ozone (0_3)	1-hour	0.090 ppm (180 µg/m^3)	No Federal Standard	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/m^3)	0.075 ppm (147 µg/m^3)	
Suspended Particulate Matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	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/m^3	No Federal Standard	
Fine Particulate Matter (PM2.5)	24-hour	No State Standard	35 µg/m^3 [c]	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/m^3	12 µg/m^3	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	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/m^3)	9 ppm (10 mg/m^3)	
Nitrogen Dioxide (NO_2)	1-Hour	0.180 ppm (339 µg/m^3)	100 ppb [d] (188 µg/m^3)	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/m^3)	0.053 ppm (100 µg/m^3)	

Table 3-1 (concluded)
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard [a]	Federal Primary Standard [b]	Most Relevant Effects
Sulfur Dioxide (SO_2)	1-Hour	0.250 ppm (655 µg/m^3)	75 ppb [e] (196 µg/m^3)	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	0.040 ppm (105 µg/m^3)	No Federal Standard	
Sulfate	24-Hour	25 µg/m^3	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 (H_2S)	1-Hour	0.030 ppm (42 µg/m^3)	No Federal Standard	Odor annoyance.
Lead (Pb)	30-Day Average	1.5 µg/m^3	No Federal Standard	a) Increased body burden; and b) Impairment of blood formation and nerve conduction.
	Rolling 3-Month Average	No State Standard	0.150 µg/m^3	
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 State standard is a visibility based standard not a health based standard and is intended to limit the frequency and severity of visibility impairment due to regional haze. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Vinyl Chloride	24-Hour	0.010 ppm (26 µg/m^3)	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 NAAQS, 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.

c) The federal 24-hour PM2.5 standard is 35 µg/m^3 (98th percentile concentration).

d) The federal one-hour NO2 standard is 100 ppb or 0.100 ppm (98th percentile concentration).

e) The federal one-hour SO2 standard is 75 ppb or 0.075 ppm (99th percentile concentration).

KEY: ppb = parts per billion parts of air, by volume; ppm = parts per million parts of air, by volume; µg/m^3 = micrograms per cubic meter; mg/ m^3 = milligrams per cubic meter

Table 3-2
2013 Air Quality Data for SCAQMD

CARBON MONOXIDE (CO) [a]			
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. ppm, 8-hour
LOS ANGELES COUNTY			
1	Central Los Angeles	330	2.0
2	Northwest Coastal Los Angeles County	340	1.3
3	Southwest Coastal Los Angeles County	281*	2.5
4	South Coastal Los Angeles County 1	249*	2.0
4	South Coastal Los Angeles County 2	--	--
4	South Coastal LA County 3	323	2.6
6	West San Fernando Valley	323	2.3
7	East San Fernando Valley	335	2.4
8	West San Gabriel Valley	201*	1.7
9	East San Gabriel Valley 1	343	1.7
9	East San Gabriel Valley 2	347	0.8
10	Pomona/Walnut Valley	340	1.6
11	South San Gabriel Valley	347	2.0
12	South Central Los Angeles County	338	3.5
13	Santa Clarita Valley	352	0.8
ORANGE COUNTY			
16	North Orange County	355	2.2
17	Central Orange County	333	2.6
18	North Coastal Orange County	313	2.0
19	Saddleback Valley	356	1.3
RIVERSIDE COUNTY			
22	Norco/Corona	--	--
23	Metropolitan Riverside County 1	334	2.0
23	Metropolitan Riverside County 2	318	1.6
23	Mira Loma	339	1.9
24	Perris Valley	--	--
25	Lake Elsinore	336	0.6
26	Temecula	--	--
29	Banning Airport	--	--
30	Coachella Valley 1**	354	1.5
30	Coachella Valley 2**	--	--
SAN BERNARDINO COUNTY			
32	Northwest San Bernardino Valley	340	1.7
33	Southwest San Bernardino Valley	--	--
34	Central San Bernardino Valley 1	337	1.3
34	Central San Bernardino Valley 2	340	1.7
35	East San Bernardino Valley	--	--
37	Central San Bernardino Mountains	--	--
38	East San Bernardino Mountains	--	--
	DISTRICT MAXIMUM		3.5
	SOUTH COAST AIR BASIN		3.5

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

[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 3-2 (Continued)
2013 Air Quality Data for SCAQMD

OZONE (O_3)										
Source Recep Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hr	Max. Conc. in ppm 8-hr	Fourth High Conc. ppm 8-hr	Health Advisory ≥ 0.15 ppm 1-hr	No. Days Standard Exceeded			
							Federal		State	
							Old > 0.124 ppm 1-hr	Current >0.075 ppm 8-hr	Current > 0.09 ppm 1-hr	Current > 0.070 ppm 8-hr
LOS ANGELES COUNTY										
1	Central Los Angeles	365	0.081	0.069	0.060	0	0	0	0	0
2	Northwest Coastal LA County	359	0.088	0.075	0.059	0	0	0	0	1
3	Southwest Coastal LA County	352	0.105	0.081	0.060	0	0	1	1	1
4	South Coastal Los Angeles County 1	267*	0.092	0.070	0.060	0	0	0	0	0
4	South Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 3	362	0.090	0.069	0.057	0	0	0	0	0
6	West San Fernando Valley	320	0.124	0.092	0.084	0	0	11	7	21
7	East San Fernando Valley	362	0.110	0.083	0.079	0	0	6	4	17
8	West San Gabriel Valley	211*	0.099	0.075	0.070	0	0	0	2	2
9	East San Gabriel Valley 1	361	0.115	0.085	0.080	0	0	6	7	15
9	East San Gabriel Valley 2	340	0.135	0.100	0.088	0	1	24	24	43
10	Pomona/Walnut Valley	355	0.125	0.099	0.085	0	1	15	12	22
11	South San Gabriel Valley	363	0.101	0.072	0.070	0	0	0	2	3
12	South Central Los Angeles County	358	0.090	0.080	0.063	0	0	1	0	1
13	Santa Clarita Valley	365	0.134	0.104	0.094	0	2	40	30	58
ORANGE COUNTY										
16	North Orange County	363	0.104	0.078	0.066	0	0	1	2	2
17	Central Orange County	340	0.084	0.070	0.063	0	0	0	0	0
18	North Coastal Orange County	385	0.095	0.083	0.065	0	0	1	1	2
19	Saddleback Valley	365	0.104	0.082	0.074	0	0	2	2	5
RIVERSIDE COUNTY										
22	Norco/Corona	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	357	0.123	0.103	0.094	0	0	26	13	38
23	Metropolitan Riverside County 2	--	--	--	--	--	--	--	--	--
23	Mira Loma	365	0.118	0.096	0.092	0	0	21	11	32
24	Perris Valley	344	0.108	0.090	0.088	0	0	34	17	60
25	Lake Elsinore	362	0.102	0.089	0.081	0	0	12	6	25
26	Temecula	324	0.093	0.078	0.075	0	0	3	0	12
29	Banning Airport	254*	0.115	0.103	0.091	0	0	41	24	66
30	Coachella Valley 1**	365	0.113	0.104	0.090	0	0	46	10	82
30	Coachella Valley 2**	365	0.105	0.087	0.085	0	0	18	2	38
SAN BERNARDINO COUNTY										
32	Northwest San Bernardino Valley	365	0.143	0.111	0.095	0	3	27	25	44
33	Southwest San Bernardino Valley	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	363	0.151	0.122	0.100	1	2	42	34	68
34	Central San Bernardino Valley 2	361	0.139	0.112	0.097	0	2	36	22	53
35	East San Bernardino Valley	356	0.133	0.119	0.104	0	3	63	43	93
37	Central San Bernardino Mountains	365	0.120	0.105	0.099	0	0	72	45	101
38	East San Bernardino Mountains	--	--	--	--	--	--	--	--	--
DISTRICT MAXIMUM			0.151	0.122	0.104	1	3	72	45	101
SOUTH COAST AIR BASIN			0.151	0.122	0.104	1	5	88	70	119

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

Table 3-2 (Continued)
2013 Air Quality Data for SCAQMD

NITROGEN DIOXIDE (NO_2) [b]					
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	1-hour Max. Conc. ppb	1-hour 98th Percentile Conc. ppb	Annual Average AAM Conc. ppb
LOS ANGELES COUNTY					
1	Central Los Angeles	301	90.3	62.6	21.8
2	Northwest Coastal Los Angeles County	291	51.2	48.8	14.5
3	Southwest Coastal Los Angeles County	334	77.8	58.0	11.8
4	South Coastal Los Angeles County 1	234*	66.9	55.7	14.0
4	South Coastal Los Angeles County 2	--	--	--	--
4	South Coastal LA County 3	325	81.3	71.3	21.5
6	West San Fernando Valley	258*	58.2	51.7	14.4
7	East San Fernando Valley	284	72.5	60.0	20.2
8	West San Gabriel Valley	200*	66.7	60.3	19.1
9	East San Gabriel Valley 1	352	76.9	56.7	17.7
9	East San Gabriel Valley 2	349	55.7	50.4	13.0
10	Pomona/Walnut Valley	343	78.8	64.8	22.5
11	South San Gabriel Valley	337	79.4	60.6	20.6
12	South Central Los Angeles County	340	69.8	61.8	17.6
13	Santa Clarita Valley	362	65.4	45.0	14.4
ORANGE COUNTY					
16	North Orange County	269*	85.0	53.3	14.8
17	Central Orange County	301	81.6	58.8	18.0
18	North Coastal Orange County	330	75.7	53.2	11.6
19	Saddleback Valley	--	--	--	--
RIVERSIDE COUNTY					
22	Norco/Corona	--	--	--	--
23	Metropolitan Riverside County 1	318	59.6	54.8	17.3
23	Metropolitan Riverside County 2	257*	57.6	50.7	15.8
23	Mira Loma	333	53.8	50.7	13.7
24	Perris Valley	--	--	--	--
25	Lake Elsinore	294	46.6	40.0	8.4
26	Temecula	--	--	--	--
29	Banning Airport	308	51.9	45.0	8.5
30	Coachella Valley 1**	359	52.3	38.5	7.5
30	Coachella Valley 2**	--	--	--	--
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	276*	62.1	53.3	17.7
33	Southwest San Bernardino Valley	--	--	--	--
34	Central San Bernardino Valley 1	335	81.7	60.6	20.6
34	Central San Bernardino Valley 2	291	72.2	54.5	17.6
35	East San Bernardino Valley	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM			90.3	71.3	22.5
SOUTH COAST AIR BASIN			90.3	71.3	22.5

KEY: ppm = parts per million -- = Pollutant not monitored * Incomplete Data ** Salton Sea Air Basin
ppb = parts per billion AAM = Annual Arithmetic Mean

[b] The NO2 federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO_2 > 0.0534 ppm. The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

Table 3-2 (Continued)
2013 Air Quality Data for SCAQMD

SULFUR DIOXIDE (SO_2) [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 Los Angeles	312	6.3	5.2
2	Northwest Coastal Los Angeles County	--	--	--
3	Southwest Coastal Los Angeles County	322	10.1	6.5
4	South Coastal Los Angeles County 1	178*	21.8	10.1
4	South Coastal Los Angeles County 2	--	--	--
4	South Coastal LA County 3	349	15.1	11.6
6	West San Fernando Valley	--	--	--
7	East San Fernando Valley	342	10.8	4.2
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 Los Angeles County	--	--	--
13	Santa Clarita Valley	--	--	--
ORANGE COUNTY				
16	North Orange County	--	--	--
17	Central Orange County	--	--	--
18	North Coastal Orange County	296	4.2	3.3
19	Saddleback Valley	--	--	--
RIVERSIDE COUNTY				
22	Norco/Corona	--	--	--
23	Metropolitan Riverside County 1	354	8.1	4.6
23	Metropolitan Riverside County 2	--	--	--
23	Mira Loma	--	--	--
24	Perris Valley	--	--	--
25	Lake Elsinore	--	--	--
26	Temecula	--	--	--
29	Banning Airport	--	--	--
30	Coachella Valley 1**	--	--	--
30	Coachella Valley 2**	--	--	--
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	--	--	--
33	Southwest San Bernardino Valley	--	--	--
34	Central San Bernardino Valley 1	298	3.8	3.1
34	Central San Bernardino Valley 2	--	--	--
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
DISTRICT MAXIMUM			21.8	11.6
SOUTH COAST AIR BASIN			21.8	11.6

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

[c] The federal SO2 1-hour standard is 75 ppb (0.075 ppm). The state standards are 1-hour average SO_2 > 0.25 ppm (250 ppb) and 24-hour average SO_2 > 0.04 ppm (40 ppb).

Table 3-2 (Continued)
2013 Air Quality Data for SCAQMD

SUSPENDED PARTICULATE MATTER PM10 [d]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m³, 24-hour	No. (%) Samples Exceeding Standard		Annual Average AAM Conc. [e] µg/m³
				Federal > 150 µg/m³, 24-hour	State > 50 µg/m³, 24-hour	
LOS ANGELES COUNTY						
1	Central Los Angeles	60	57	0	1(2%)	29.5
2	Northwest Coastal Los Angeles County	--	--	--	--	--
3	Southwest Coastal Los Angeles County	56	38	0	0	20.8
4	South Coastal Los Angeles County 1	43*	37	0	0	23.2
4	South Coastal Los Angeles County 2	56	54	0	1(2%)	27.3
4	South Coastal LA County 3	--	--	--	--	--
6	West San Fernando Valley	--	--	--	--	--
7	East San Fernando Valley	58	52	0	1(2%)	28.5
8	West San Gabriel Valley	--	--	--	--	--
9	East San Gabriel Valley 1	61	76	0	6(10%)	33.0
9	East San Gabriel Valley 2	--	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	--	--	--	--	--
12	South Central Los Angeles County	--	--	--	--	--
13	Santa Clarita Valley	60	43	0	0	21.6
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	59	77	0	1(2%)	25.4
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	61	51	0	1(2%)	19.3
RIVERSIDE COUNTY						
22	Norco/Corona	57	58	0	2(4%)	28.3
23	Metropolitan Riverside County 1	119	135	0	10(8%)	33.8
23	Metropolitan Riverside County 2	--	--	--	--	--
23	Mira Loma	59	147	0	14(24%)	41.1
24	Perris Valley	57	70	0	10(18%)	33.6
25	Lake Elsinore	--	--	--	--	--
26	Temecula	--	--	--	--	--
29	Banning Airport	61	64	0	1(2%)	20.6
30	Coachella Valley 1**	60	129	0	3(5%)	22.6
30	Coachella Valley 2**	120	129 +	0+	23(19%)	38.1
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	--	--	--	--	--
33	Southwest San Bernardino Valley	60	115	0	3(5%)	33.2
34	Central San Bernardino Valley 1	61	90	0	19(31%)	40.6
34	Central San Bernardino Valley 2	60	102	0	3(5%)	31.3
35	East San Bernardino Valley	61	72	0	2(3%)	27.1
37	Central San Bernardino Mountains	60	37	0	0	21.4
38	East San Bernardino Mountains	--	--	--	--	--
	DISTRICT MAXIMUM		147+	0+	23	41.1
	SOUTH COAST AIR BASIN		147	0	33	41.1

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

AAM = Annual Arithmetic Mean

+ = High PM10 data sample (159 µg/m³ on August 23, 2013 at Indio) excluded due to the high wind in accordance with the EPA Exceptional Event Regulation. Also, multiple high PM10FEM data recorded in Coachella Valley and the Basin were excluded.

d) Federal Reference Method (FRM) PM10 samples were collected every six days at all sites except for Stations 4144 and 4157, where samples were collected every three 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 153 $\mu g/m^3$ at Indio (155 $\mu g/m^3$ is needed to exceed the PM10 standards.

e) Federal annual PM10 standard (AAM > 50 $\mu g/m^3$) was revoked in 2006. State standard is annual average (AAM) > 20 $\mu g/m^3$.

Table 3-2 (Continued)
2013 Air Quality Data for SCAQMD

FINE PARTICULATE MATTER PM2.5 [f]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m³, 24-hour	98th Percentile Conc. in µg/m³ 24-hr	No. (%) Samples Exceeding Federal Std > 35 µg/m³, 24-hour	Annual Average AAM Conc. [g] µg/m³
LOS ANGELES COUNTY						
1	Central Los Angeles	344	43.1	29.0	1(0.3%)	11.95
2	Northwest Coastal Los Angeles County	--	--	--	--	--
3	Southwest Coastal Los Angeles County	--	--	--	--	--
4	South Coastal Los Angeles County 1	331	47.2	26.1	2(0.6%)	11.34
4	South Coastal Los Angeles County 2	341	42.9	24.6	1(0.3%)	10.97
4	South Coastal LA County 3	--	--	--	--	--
6	West San Fernando Valley	118	41.8	23.0	1(0.8%)	9.71
7	East San Fernando Valley	346	45.1	30.4	4(1.2%)	12.15
8	West San Gabriel Valley	64*	25.7	20.5	0(0%)	10.13
9	East San Gabriel Valley 1	120	29.6	26.4	0(0%)	10.54
9	East San Gabriel Valley 2	--	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	114	29.1	28.8	0(0%)	11.56
12	South Central Los Angeles County	113	52.1	24.3	1(0.9%)	11.95
13	Santa Clarita Valley	--	--	--	--	--
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	331	37.8	22.7	1(0.3%)	10.09
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	117	28.0	17.5	0(0%)	8.08
RIVERSIDE COUNTY						
22	Norco/Corona	--	--	--	--	--
23	Metropolitan Riverside County 1	353	60.3	34.6	6(1.7%)	12.50
23	Metropolitan Riverside County 2	117	53.7	29.2	1(0.9%)	11.28
23	Mira Loma	355	56.5	37.5	9(2.5%)	14.12
24	Perris Valley	--	--	--	--	--
25	Lake Elsinore	--	--	--	--	--
26	Temecula	--	--	--	--	--
29	Banning Airport	--	--	--	--	--
30	Coachella Valley 1**	117	18.5	13.8	0(0%)	6.52
30	Coachella Valley 2**	118	25.8	15.9	0(0%)	8.35
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	--	--	--	--	--
33	Southwest San Bernardino Valley	110	49.3	26.8	1(0.9%)	11.98
34	Central San Bernardino Valley 1	121	43.6	33.1	1(0.8%)	12.26
34	Central San Bernardino Valley 2	110	55.3	33.4	1(0.9%)	11.41
35	East San Bernardino Valley	--	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--	--
38	East San Bernardino Mountains	59	35.5	35.1	1(1.7%)	9.67
DISTRICT MAXIMUM			60.3	37.5	9	14.12
SOUTH COAST AIR BASIN			60.4	37.5	13	14.12

KEY: µg/m3 = micrograms per cubic meter of air -- = Pollutant not monitored * Incomplete Data ** Salton Sea Air Basin
AAM = Annual Arithmetic Mean

f) PM2.5 samples were collected every three days at all sites except for station numbers 069, 072, 077, 087,3176, 4144 and 4165, where samples were taken daily, and station number 5818 where samples were taken every six days. PM10 statistics listed above are for the Federal Reference Method (FRM) data only. Federal Equivalent Method (FEM) PM2.5 continuous monitoring instruments were operated at some of the above locations for special purposes with the max 24-hour average concentration recorded of 83.2 µg/m³, (at Mira Loma).

g) USEPA has revised the federal annual PM2.5 standard from annual average (AAM) > 15.0 µg/m³ to 12 µg/m³, effective March 18, 2013. State standard is annual average (AAM) > 12 µg/m³.

Table 3-2 (Concluded)
2013 Air Quality Data for SCAQMD

Source Receptor Area No.	Location of Air Monitoring Station	LEAD [h] Max. Monthly Average Conc. µg/m³	LEAD [h] Max. 3-Months Rolling Averages, µg/m³	PM10 SULFATES [i] No. Days of Data	PM10 SULFATES [i] Max. Conc. µg/m³, 24-hour
LOS ANGELES COUNTY					
1	Central Los Angeles	0.013	0.011	60	5.8
2	Northwest Coastal Los Angeles County	--	--	--	--
3	Southwest Coastal Los Angeles County	0.005	0.004	56	5.6
4	South Coastal Los Angeles County 1	0.006	0.006	43*	4.5
4	South Coastal Los Angeles County 2	0.012	0.009	56	4.8
4	South Coastal LA County 3	--	--	--	--
6	West San Fernando Valley	--	--	--	--
7	East San Fernando Valley	--	--	58	5.4
8	West San Gabriel Valley	--	--	--	--
9	East San Gabriel Valley 1	--	--	61	4.8
9	East San Gabriel Valley 2	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--
11	South San Gabriel Valley	0.012	0.011	--	--
12	South Central Los Angeles County	0.014	0.011	--	--
13	Santa Clarita Valley	--	--	60	3.7
ORANGE COUNTY					
16	North Orange County	--	--	--	--
17	Central Orange County	--	--	59	4.7
18	North Coastal Orange County	--	--	--	--
19	Saddleback Valley	--	--	61	4.4
RIVERSIDE COUNTY					
22	Norco/Corona	--	--	57	4.2
23	Metropolitan Riverside County 1	0.010	0.009	119	4.2
23	Metropolitan Riverside County 2	0.007	0.006	--	--
23	Mira Loma	--	--	59	4.2
24	Perris Valley	--	--	57	3.4
25	Lake Elsinore	--	--	--	--
26	Temecula	--	--	--	--
29	Banning Airport	--	--	61	2.9
30	Coachella Valley 1**	--	--	60	3.5
30	Coachella Valley 2**	--	--	120	3.9
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	0.008	0.006	--	--
33	Southwest San Bernardino Valley	--	--	60	4.8
34	Central San Bernardino Valley 1	--	--	61	4.1
34	Central San Bernardino Valley 2	0.010	0.010	60	4.6
35	East San Bernardino Valley	--	--	61	3.6
37	Central San Bernardino Mountains	--	--	60	3.6
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM		0.013++	0.011++		5.8
SOUTH COAST AIR BASIN		0.013++	0.011++		5.8

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

++ = Higher lead concentrations were recorded at source-oriented monitoring sites immediately downwind of stationary lead sources. Maximum monthly and 3-month rolling averages recorded were 0.14 µg/m³ and 0.10 µg/m³, respectively.

h) Federal lead standard is 3-month rolling average > 0.15 µg/m³; and state standard is monthly average ≥ 1.5 µg/m³. Lead statistics listed above are for population-oriented sites only. Lead standards were not exceeded.

i) State sulfate standard is 24-hour ≥ 25 µg/m³. There is no federal standard for sulfate.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, relatively inert gas. It is a trace constituent in the unpolluted troposphere, and is produced by both natural processes and human activities. In remote areas far from human habitation, CO occurs in the atmosphere at an average background concentration of 0.04 parts per million (ppm), primarily as a result of natural processes such as forest fires and the oxidation of methane. Global atmospheric mixing of CO from urban and industrial sources creates higher background concentrations (up to 0.20 ppm) near urban areas. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline. Approximately 98 percent of the CO emitted into the Basin's atmosphere is from mobile sources. Consequently, CO concentrations are generally highest in the vicinity of major concentrations of vehicular traffic.

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 (unborn babies), 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 pre-term births and heart abnormalities.

CO concentrations were measured at 26 locations in the Basin and neighboring Salton Sea Air Basin (SSAB) areas in 2013. Carbon monoxide concentrations did not exceed any of the federal or state standards in 2013. The highest eight-hour average carbon monoxide concentration recorded (3.5 ppm in the South Central Los Angeles County area) was 39 percent of the federal eight-hour carbon monoxide standard of 9.0 ppm. The state eight-hour standard is also 9.0 ppm.

The 2003 AQMP revisions to the SCAQMD's CO Plan served two purposes: 1) it replaced the 1997 attainment demonstration that lapsed at the end of 2000; and, 2) it provided the basis

for a CO maintenance plan in the future. In 2004, the SCAQMD formally requested the USEPA to re-designate the Basin from non-attainment to attainment with the CO National Ambient Air Quality Standards. On February 24, 2007, USEPA published in the FR its proposed decision to re-designate the Basin from non-attainment to attainment for CO. The comment period on the re-designation proposal closed on March 16, 2007 with no comments received by the USEPA. On May 11, 2007, USEPA published in the FR its final decision to approve the SCAQMD's request for re-designation from non-attainment to attainment for CO, effective June 11, 2007.

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 0.02 ppm to 0.045 ppm), however recent studies indicate that the 'background' value of ozone may be rising due to the increased influence of pollution from global pollution produced outside of the SCAQMD[3, 4].

While ozone is beneficial in the stratosphere because it filters out skin-cancer-causing ultraviolet radiation, it is a highly reactive oxidant. It is this reactivity which accounts for its damaging effects on materials, plants, and human health at the earth's surface.

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 abovementioned observed responses. Animal studies suggest that exposures to a combination

[3] Fiore et al, "Background Ozone Over the United States in Summer: Origin, Trend, and Contribution to Pollution Episodes," Journal of Geophysical Research - Atmospheres, Vol. 107 - D15, 2002, pp. ACH 11-1–ACH 11-25. http://onlinelibrary.wiley.com/doi/10.1029/2001JD000982/abstract

[4] R. Vingarzan, "A Review of Surface Ozone Background Levels and Trends," Atmospheric Environment, Volume 38,2004, pp. 3431–3442. http://www.sciencedirect.com/science/article/pii/S1352231004002808

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 2013, the SCAQMD regularly monitored ozone concentrations at 31 locations in the Basin and SSAB. Maximum ozone concentrations for all areas monitored were below the stage 1 episode level (0.20 ppm). Maximum ozone concentrations in the SSAB areas monitored by the SCAQMD were lower than the maximum values found in the Basin.

In 2013, the maximum ozone concentrations in the Basin continued to exceed federal standards by wide margins. The maximum one-hour ozone concentration was 0.151 ppm and the maximum eight-hour ozone concentration was 0.122 ppm; both were recorded in the Central San Bernardino Valley 1 area. The federal one-hour ozone standard was revoked and replaced by the eight-hour average ozone standard effective June 15, 2005. Effective May 27, 2008, the USEPA revised the federal eight-hour ozone standard from 0.84 ppm to 0.075 ppm. The maximum eight-hour concentration was 163 percent of the current federal standard. The maximum one-hour concentration was 168 percent of the one-hour state ozone standard of 0.09 ppm. The maximum eight-hour concentration was 174 percent of the eight-hour state ozone standard of 0.070 ppm.

Nitrogen Dioxide

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 sub-groups. 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 2013, NO2 concentrations were monitored at 26 locations. No area of the Basin or SSAB exceeded the federal or state standards for nitrogen dioxide. The Basin has not exceeded the federal standard for nitrogen dioxide (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 U.S.

In 2013, the maximum annual average concentration was 22.5 parts per billion (ppb) recorded in the Pomona/Walnut Valley area. Effective March 20, 2008, CARB revised the nitrogen dioxide one-hour standard from 0.25 ppm (250 ppb) to 0.18 ppm (180 ppb) and established a new annual standard of 0.030 ppm (30 ppb). In addition, USEPA has established a new federal one-hour NO2 standard of 100 ppb (98th percentile concentration), effective April 7, 2010. The highest one-hour maximum concentration recorded in 2013 (90.3 ppb in Central Los Angeles County area) was 50 percent of the state one-hour standard. The highest one-hour 98th percentile concentration, recorded in 2013 (71.3 ppb in the South Coastal Los Angeles County area near the ports of Los Angeles and Long Beach), was 40 percent of the state one-hour standard and 71 percent of the federal one-hour standard. NOx emission reductions continue to be necessary because it is a precursor to both ozone and PM (PM2.5 and PM10) concentrations.

Sulfur Dioxide

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 SO2 occurred in 2013 at any of the eight monitoring locations. The maximum one-hour SO2 concentration was 21.8 ppb, as recorded in the South Coastal Los Angeles County 1 area. The USEPA revised the federal sulfur

dioxide standard by establishing a new one-hour standard of 0.075 ppm (75 ppb) and revoking the existing annual arithmetic mean (0.03 ppm) and the 24-hour average (0.14 ppm), effective August 2, 2010. The state standards are 0.25 ppm (250 ppb) for the one-hour average and 0.04 ppm (40 ppb) for the 24-hour average. 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. Because historical measurements have consistently showed concentrations to be well below standards, monitoring has been limited to locations within the District that may have higher concentrations and higher potential exposures to the pollutant.

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) 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 (PM10 and 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 U.S. and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by fine particles (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 pre-existing respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM10 and PM2.5.

The SCAQMD monitored PM10 concentrations at 21 locations in 2013. The federal 24-hour PM10 standard (150 $\mu g/m^3$) was not exceeded at any of the locations monitored in 2013. The federal annual PM10 standard has been revoked, effective 2006. A maximum 24-hour PM10 concentration of 147 $\mu g/m^3$ was recorded in the Mira Loma area and was 98 percent of the federal standard and 294 percent of the much more stringent state 24-hour PM10 standard (50 $\mu g/m^3$). The state 24-hour PM10 standard was exceeded at 17 of the 21 monitoring stations. A maximum annual average PM10 concentration of 41.1 $\mu g/m^3$ was recorded in Mira Loma. The maximum annual average PM10 concentration in Mira Loma was 206 percent of the state standard of 20 $\mu g/m^3$. The USEPA published approval of SCAQMD's PM10 request for redesignation for attainment on June 26, 2013, with an implementation date of July 26, 2013.

In 2013, PM2.5 concentrations were monitored at 20 locations throughout the district. USEPA revised the federal 24-hour PM2.5 standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$, effective December 17, 2006, and retained the form of the standard using the 98th percentile each year, averaged over three years. In 2013, the 98th percentile PM2.5 concentrations in the Basin

exceeded the current federal 24-hour PM2.5 standard in two of the 20 locations. A 98th percentile 24-hour PM2.5 concentration of 37.5 μg/m^3 was recorded in the Metropolitan Riverside County 1 area, which represents 107 percent of the federal standard of 35 μg/m^3. Further, in July 2015, SCAQMD staff submitted a letter to EPA requesting a change in its attainment status to 'Serious' non-attainment due to high 24-hour concentrations of PM2.5 persisting through 2015. A maximum annual average PM2.5 concentration of 14.12 μg/m^3 was recorded in Mira Loma, which represents 118 percent of both the federal and state standard of 12 μg/m^3.

Similar to PM10 concentrations, PM2.5 concentrations were higher in the inland valley areas of San Bernardino and Metropolitan Riverside counties. However, PM2.5 concentrations were also high in Central Los Angeles County and the East San Gabriel Valley. The high PM2.5 concentrations in Los Angeles County are mainly due to the secondary formation of smaller particulates resulting from mobile and stationary source activities. In contrast to PM10, PM2.5 concentrations were low in the Coachella Valley area of SSAB. PM10 concentrations are normally higher in the desert areas due to windblown and fugitive dust emissions.

Lead

Under the federal Clean Air Act, lead is classified as a "criteria pollutant." Lead has observed adverse health effects at ambient concentrations. Lead is also deemed a carcinogenic toxic air contaminant (TAC) by the Office of Environmental Health Hazard Assessment (OEHHA). The USEPA has thoroughly reviewed the lead exposure and health effects research, and has prepared substantial documentation in the form of a Criteria Document to support the selection of the 2008 NAAQS for lead. The Criteria Document used for the development of the 2008 NAAQS for lead states that studies and evidence strongly substantiate that blood lead levels in a range of 5-10 μg/dL, or possibly lower, could likely result in neurocognitive effects in children. The report further states that "there is no level of lead exposure that can yet be identified with confidence, as clearly not being associated with some risk of deleterious health effects[5]."

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. Chronic health effects include nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Exposure to lead can also potentially increase the risk of contracting cancer or result in other adverse health effects. Lead has been classified as a probable human carcinogen by the International Agency for Research on Cancer, based mainly on sufficient animal evidence, and as reasonably anticipated to be a human carcinogen by the U.S. National Toxicology Program. Young children are especially susceptible to the effects of environmental lead because their bodies accumulate lead more readily than do those of adults, and because they are more

[5] Environmental Protection Agency, Office of Research and Development, "Air Quality Criteria Document for Lead, Volumes I-II," October 2006.

vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

Lead poisoning can cause anemia, lethargy, seizures, and death. 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.

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

As a result, the federal and current state standards for lead were not exceeded in any area of the district in 2013. There have been no violations of these standards at the SCAQMD's regular air monitoring stations since 1982, as a result of removal of lead from fuels.

On November 12, 2008, USEPA published new NAAQS for lead, which became effective January 12, 2010. The existing national lead standard, 1.5 $\mu g/m^3$, was reduced to 0.15 $\mu g/m^3$, averaged over a rolling three-month period.

The maximum 3-month rolling average lead concentration (0.011 $\mu g/m^3$ was recorded at monitoring stations in Central Los Angeles, South San Gabriel Valley, and South Central LA County areas) was seven percent of the federal 3-month rolling lead standard (0.15 $\mu g/m^3$). The maximum monthly average lead concentration (0.014 $\mu g/m^3$ in South Central Los Angeles County area), measured at special monitoring sites immediately adjacent to stationary sources of lead was 0.9 percent of the state monthly average lead standard (1.5 $\mu g/m^3$). No lead data were obtained at SSAB and Orange County stations in 2013. Because historical lead data showed concentrations in SSAB and Orange County areas to be well below the standard, measurements have been discontinued at these locations.

In 2010, a portion of Los Angeles County was designated as not attaining the NAAQS of 0.15 $\mu g/m^3$ for lead based on monitored air quality data from 2007 to 2009 that indicated a violation of the NAAQS near and due to one of two large lead-acid battery recycling facilities in the District. However, the new federal standard was not exceeded at any source/receptor location the following year (in 2011).

Nevertheless, based on the monitored emissions from the two battery recycling facilities, USEPA designated the Los Angeles County portion of the Basin as non-attainment for the new lead standard, effective December 31, 2010. In response to the new federal lead standard, the SCAQMD adopted Rule 1420.1 – Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities, in November 2010, to ensure that lead emissions do not exceed the new federal standard.

In response to the nonattainment designation, the State submitted the *Final 2012 Lead State Implementation Plan – Los Angeles County* (2012 Lead SIP) to the USEPA on June 20, 2012.

The plan outlines steps that will bring the area into attainment with the federal lead standard before December 31, 2015. As of February 11, 2014, the USEPA announced in the Federal Register (FR) final approval of the lead air quality plan, to be effective 30 days after publication (e.g., March 12, 2014).

In 2013, higher lead concentrations continued to be recorded at source-oriented monitoring sites immediately downwind of stationary lead sources. The maximum monthly and 3-month rolling averages recorded in 2013 were 0.14 $\mu g/m^3$ and 0.10 $\mu g/m^3$, respectively.

In May 2014, the USEPA released its "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards," reaffirming the primary (health-based) and secondary (welfare-based) staff conclusions regarding whether to retain the current standards. In January 2015, the USEPA announced that the ambient lead concentration standard of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period would remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and requires further action by the USEPA.

To continue to pursue reducing lead emissions from large lead-acid battery recycling facilities, in March 2015, Rule 1420.1 was amended to further lower the ambient lead concentration limit to 0.120 $\mu g/m^3$ effective January 1, 2016 and 0.100 $\mu g/m^3$ effective January 1, 2017 and the point source lead emission rate to 0.023 pounds per hour, as well as adding additional housekeeping and maintenance requirements.

On April 7, 2015, the larger of the two lead-acid battery recycling facilities withdrew its California Department of Toxic Substance Control (DTSC) permit application and provided notification of its intent to permanently close.

While Rule 1420.1 will be effective in reducing emissions from the large lead-acid battery recycling industry, lead emissions from the broader industry source category of metal melting is still a concern because the metal melting industry is the most significant stationary source of reported lead emissions. While existing federal and state regulations currently control lead emissions from the metal melting industry, additional requirements similar to those that have effectively reduced emissions from large lead-acid battery recyclers are also necessary to adequately protect public health by minimizing public exposure to lead emissions and preventing exceedances of the lead NAAQS in the Basin. As a result, the SCAQMD adopted Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities at the October SCAQMD Governing Board meeting.

Sulfates

Sulfates (SOx) 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 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 SOx. Thus, both mortality and morbidity effects have been observed with an increase in ambient SOx concentrations. However, efforts to separate the effects of SOx 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 non-acidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.

In 2013, the state 24-hour sulfate standard (25 $\mu g/m^3$) was not exceeded in any of the monitoring locations in the district. There is no federal sulfate standard.

Hydrogen Sulfide

Hydrogen Sulfide (H2S) is a colorless gas with the characteristic foul odor of rotten eggs. H2S is heavier than air, very poisonous, corrosive, flammable, and explosive. H2S is naturally occurring in crude oil and natural gas, but H2S can also be created from the bacterial breakdown of organic matter in the absence of oxygen (e.g., in swamps and sewers). For example, on September 9, 2012, a thunderstorm over the Salton Sea caused odors to be released across the Coachella Valley. The SCAQMD received over 235 complaints of sulfur and rotten egg type odors in response to this natural event. Air samples were taken at several locations around the Salton Sea area to confirm source of odors and results of sampling showed total sulfur gas concentration of 149 ppb. The State air quality standard for H2S is 30 ppb, averaged over one-hour, and the odor threshold for H2S is approximately eight ppb. In response to potential for increasing odor complaints in the future, in October 2013, the SCAQMD installed two H2S monitors in the Coachella Valley to monitor the presence of H2S during odor events at the Salton Sea. The monitors are located at Saul Martinez Elementary School in Mecca and on the Torres Martinez Desert Cahuilla Indian Tribal land near the north end of the Salton Sea.

Vinyl Chloride

Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified as a carcinogen by the state Office of Environmental Health Hazard Assessment (OEHHA), in addition to the designations by the American Conference of Governmental Industrial Hygienists (confirmed carcinogen in humans) and by the International Agency for Research on Cancer (known to be a human carcinogen). 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 the 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 district are subject to SCAQMD 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 below the level of detection. Therefore, the 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 volatile organic compounds (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 O3, which is a criteria pollutant. 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.

Visibility

In 2005, annual average visibility at Rubidoux (Riverside), the worst case, was just over 10 miles. With the exception of Lake County, which is designated in attainment, all of the air districts in California are currently designated as unclassified with respect to the CAAQS for visibility reducing particles.

In Class-I wilderness areas, which typically have visual range measured in tens of miles the deciview metric is used to estimate an individual's perception of visibility. The deciview index works inversely to visual range which is measured in miles or kilometers whereby a lower deciview is optimal. In the South Coast Air Basin, the Class-I areas are typically

restricted to higher elevations (greater than 6,000 feet above sea level) or far downwind of the metropolitan emission source areas. Visibility in these areas is typically unrestricted due to regional haze despite being in close proximity to the urban setting. The 2005 baseline deciview mapping of the Basin is presented in Figure 3-1. All of the Class-I wilderness areas reside in areas having average deciview values less than 20 with many portions of those areas having average deciview values less than 10. By contrast, Rubidoux, in the Basin has a deciview value exceeding 30.

Federal Regional Haze Rule: The federal Regional Haze Rule, established by the USEPA pursuant to CAA §169A establishes the national goal to prevent future and remedy existing impairment of visibility in federal Class I areas (such as federal wilderness areas and national parks). USEPA's visibility regulations (40 CFR Parts 51.300 - 51.309), require states to develop measures necessary to make reasonable progress towards remedying visibility impairment in these federal Class I areas. CAA §169A and USEPA's visibility regulations also require Best Available Retrofit Technology (BART) for certain large stationary sources that were put in place between 1962 and 1977. (See Regional Haze Regulations and Guidelines for BART Determinations, 70 FR 39104, July 6, 2005).

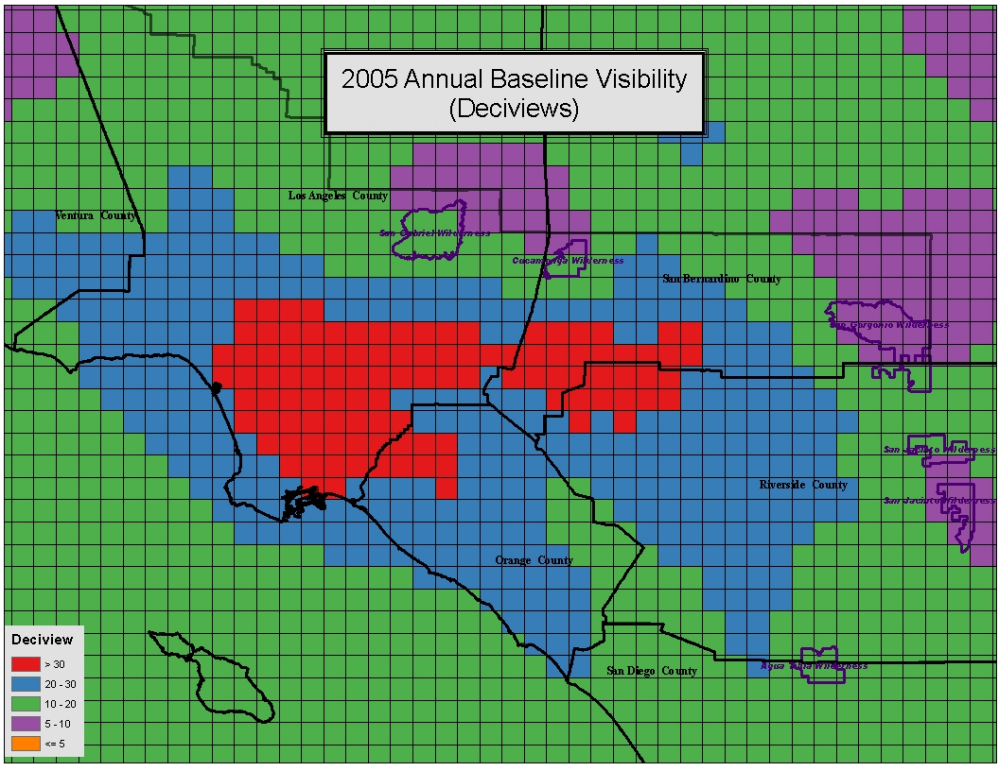

Figure 3-1
2005 Annual Baseline Visibility

California Air Resources Board: Since deterioration of visibility is one of the most obvious manifestations of air pollution and plays a major role in the public's perception of air quality, the state of California has adopted a standard for visibility or visual range. Until 1989, the standard was based on visibility estimates made by human observers. The

standard was changed to require measurement of visual range using instruments that measure light scattering and absorption by suspended particles.

The visibility standard is based on the distance that atmospheric conditions allow a person to see at a given time and location. Visibility reduction from air pollution is often due to the presence of sulfur and nitrogen oxides, as well as particulate matter. Visibility degradation occurs when visibility reducing particles are produced in sufficient amounts such that the extinction coefficient is greater than 0.23 inverse kilometers (to reduce the visual range to less than 10 miles) at relative humidity less than 70 percent, 8-hour average (from 10:00 a.m. to 6:00 p.m.) according to the state standard. Future-year visibility in the Basin is projected empirically using the results derived from a regression analysis of visibility with air quality measurements. The regression data set consisted of aerosol composition data collected during a special monitoring program conducted concurrently with visibility data collection (prevailing visibility observations from airports and visibility measurements from district monitoring stations). A full description of the visibility analysis is given in Appendix V of the 2012 AQMP.

With future year reductions of PM2.5 from implementation of all proposed emission controls for 2015, the annual average visibility would improve from 10 miles (calculated for 2008) to over 20 miles at Rubidoux, for example. Visual range in 2021 at all other Basin sites is expected to equal or exceed the Rubidoux visual range. Visual range is expected to double from the 2008 baseline due to reductions of secondary PM2.5, directly emitted PM2.5 (including diesel soot) and lower NO2 concentrations as a result of 2007 AQMP controls.

To meet Federal Regional Haze Rule requirements, CARB adopted the California Regional Haze Plan on January 22, 2009, addressing California's visibility goals through 2018. As shown in Table 3.2-1, California's statewide standard (applicable outside of the Lake Tahoe area) for Visibility Reducing Particles is an extinction coefficient of 0.23 per kilometer over an 8-hour averaging period. This translates to visibility of ten miles or more due to particles when relative humidity is less than 70 percent.

Non-Criteria Pollutants

Although the SCAQMD's primary mandate is attaining the State and National Ambient Air Quality Standards for criteria pollutants within the district, SCAQMD also has a general responsibility pursuant to HSC §41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires the SCAQMD to implement airborne toxic control measures (ATCM) adopted by CARB, and to implement the Air Toxics "Hot Spots" Act. As a result, the SCAQMD has regulated pollutants other than criteria pollutants such as TACs, greenhouse gases and stratospheric ozone depleting compounds. The 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, the 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 the CAA §112, the USEPA is required to regulate sources that emit one or more of the 187 federally listed hazardous air pollutants (HAPs). HAPs are air toxic 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 USEPA 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 USEPA for major sources (sources emitting greater than 10 tons per year of a single HAP or greater than 25 tons per year of multiple HAPs). The 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 district that are already controlled by state-mandated air toxics control measures or by local district rules, many of the sources that would have been subject to federal requirements already comply.

In addition to the major source NESHAPs, USEPA has also controlled HAPs from urban areas by developing Area Source NESHAPs under their Urban Air Toxics Strategy. USEPA 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 USEPA to identify a list of at least 30 air toxics that pose the greatest potential health threat in urban areas. USEPA 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. USEPA 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 as a health hazard, however, diesel particulate matter itself is not one of their listed toxic air contaminants (TACs). Rather, each toxic compound in the speciated list of compounds in exhaust is considered separately. Although there are no specific NESHAP regulations for diesel PM, diesel particulate emission 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 (TAC) Identification and Control Act, Assembly Bill (AB) 1807, Tanner. Under the state program, TACs 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 air toxic control measures (ATCMs) are adopted to control emissions from specific sources. CARB has adopted a regulation designating all 187 federal HAPs as TACs.

ATCMs are developed by CARB and implemented by the SCAQMD and other air districts through direct implementation or 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 state-wide 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 the SCAQMD. Phase I consists of facilities that emit over 25 tons per year of any criteria pollutant and facilities present on the SCAQMD's toxics list. Phase I facilities entered the program by reporting their air TAC emissions for calendar year 1989. Phase II consists of facilities that emit between 10 and 25 tons per year 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 (DRRP) which was adopted in September 2000 (http://www.arb.ca.gov/diesel/documents/rrpapp.htm) with the goal of reducing diesel particulate matter emissions from compression ignition engines and associated health risk by 75 percent by 2010 and 85 percent by 2020. The DRRP 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 diesel PM emissions from mobile sources such as trucks, buses, construction equipment, locomotives, and ships.

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 emission 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 the SCAQMD's toxic regulatory program there are 15 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 SCAQMD Rule 461 – Gasoline Transfer and Dispensing, which reduces benzene emissions from gasoline dispensing and SCAQMD Rule 1124 – Aerospace Assembly and Component Manufacturing Operations, which reduces perchloroethylene, trichloroethylene, and methylene chloride emissions from aerospace operations.

New and modified sources of TACs in the district are subject to SCAQMD Rule 1401 - New Source Review of Toxic Air Contaminants and SCAQMD Rule 212 - Standards for Approving Permits. Rule 212 requires notification of the 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 an 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 1/4-mile radius, or other area deemed appropriate by the 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. Rule 1401 lists nearly 300 TACs that are evaluated during the SCAQMD's permitting process for new, modified or relocated sources. During the past decade, more than 80 compounds have been added or had risk values amended. The addition of diesel particulate matter from diesel-fueled internal combustion engines as a TAC in March 2008 was one of the most substantial amendments to the rule. SCAQMD 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: In March 2000, the SCAQMD Governing Board approved the Air Toxics Control Plan (ATCP) which was the first comprehensive plan in the nation to

guide future toxic rulemaking and programs. The ATCP was developed to lay out the 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 State Implementation Plan (SIP) measures. The concept for the plan was an outgrowth of the Environmental Justice principles and the Environmental Justice Initiatives adopted by the SCAQMD Governing Board in October 1997. Monitoring studies and air toxics regulations that were created from these initiatives emphasized the need for a more systematic approach to reducing TACs. 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 district. The plan proposed control strategies to reduce TACs in the district implemented between years 2000 and 2010 through cooperative efforts of the SCAQMD, local governments, CARB and USEPA.

2003 Cumulative Impact Reduction Strategies: The SCAQMD Governing Board approved a cumulative impacts reduction strategy in September 2003. The resulting 25 cumulative impacts strategies were a key element of the 2004 Addendum to the ATCP (see next section). 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:

- SCAQMD Rule 1401.1 - Requirements for New and Relocated Facilities Near Schools. which set more stringent health risk requirements for new and relocated facilities near schools
- SCAQMD Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines, which established diesel PM emission limits and other requirements for diesel-fueled engines
- SCAQMD Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium, which regulated chrome spraying operations
- SCAQMD Rule 410 – Odors 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 to the ATCP: An addendum to the ATCP was adopted by the SCAQMD Governing Board in 2004 (referred to herein as the 2004 Addendum to the ATCP) 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 to the ATCP were to address the progress made in implementation of the 2000 ATCP control strategies; provide a historical perspective of air toxic emissions and current air toxic levels; incorporate the Cumulative Impact Reduction Strategies approved by the SCAQMD Governing Board 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 the SCAQMD strategies from the 2000 ATCP and the 2004 Addendum to the ATCP. CARB has also made notable progress in mobile source measures via its Diesel Risk Reduction Plan, especially for goods movement related sources, while the USEPA 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 Air Toxics Control Plan (ATCP) and the 2004 Addendum. The objective of the 2010 CCP is to reduce the exposure to air toxics and air-related nuisances throughout the district, 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 the SCAQMD staff will work 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: In October 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 (MICR): greater than 10 in one million (10×10^{-6})
- Total Hazard Index (HI): 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 AB2588 Toxics "Hot Spots" Program is implemented through SCAQMD Rule 1402 – Control of Toxic Air Contaminants from Existing Sources. The 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 400 core facilities in the SCAQMD's AB2588 program. Since 1992 when the state Health and Safety Code incorporated a risk reduction requirement in the program, the SCAQMD has reviewed and approved over 300 HRAs, approximately 45 facilities were required to do a public notice, and 23 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 98 percent have acute and chronic hazard indices of less than one.

CEQA Intergovernmental Review Program: The 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 diesel particulate matter from truck idling and movement (e.g., truck stops, warehouse and distribution centers, or transit centers), ship hotelling 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 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 TACs from warehousing facilities.

Environmental Justice: Environmental justice (EJ) has long been a focus of the SCAQMD. In 1990, the SCAQMD formed an Ethnic Community Advisory Group that has since been restructured as the Environmental Justice Advisory Group (EJAG). 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 and MATES III); the Clean Fleet Rules, the Cumulative Impacts strategies; 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 the 2004 Addendum to the ATCP. 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 the 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 the SCAQMD's website (www.aqmd.gov).

AB 2766 Subvention Funds: AB2766 subvention funds are monies collected by the state as part of vehicle registration and passed through to the SCAQMD for funding projects of local cities, among others, that reduce motor vehicle air pollutants. The Clean Fuels Program, funded by a surcharge on motor vehicle registrations in the SCAQMD, reduces TAC emissions through co-funding projects to 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 the SCAQMD's Technology Advancement Office help to reduce diesel PM 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: SB 1731, enacted in 1992 and codified at HSC §44390 et seq., amended AB 2588 to include a requirement for facilities with significant risks to prepare and implement a risk reduction plan which 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, the 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 (MATES): In 1986, SCAQMD conducted the first MATES Study to determine the Basin-wide risks associated with major airborne carcinogens. At the time, the state of technology was such that only twenty 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 the USEPA, and by the CalEPA, including the Office of Environmental Health Hazard Assessment and the ARB. 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 study to quantify the magnitude of population exposure risk from existing sources of selected air toxic contaminants at that time. The follow up study, MATES II, included a monitoring program of 40 known air toxic compounds, an updated emissions inventory of TACs (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 diesel particulate 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 a follow up to previous air toxics studies in the Basin and was part of the SCAQMD Governing Board's 2003-04 Environmental Justice Workplan. The MATES III Study consists of several elements including a monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize carcinogenic health risk across the Basin. Besides toxics, additional measurements include organic carbon, elemental carbon, and total carbon, as well as, 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): The MATES IV Study consisted of several elements including 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. The population weighted risk of 367 per million was about 57% lower compared to the MATES III period (2005). The Final MATES IV also reported risks using new guidance for calculating health risks from the state Office of Environmental Health Hazard Assessment that take into account children's greater risk from being exposed to cancer causing compounds. Even after accounting for the reduced level of exposure from the MATES IV study compared to MATES III, after applying the revised OEHHA methodology to the modeled air toxics levels, the MATES IV estimated population weighted risk is 897 per million, an increase of about 2.5 times higher.

Carcinogenic Health Risks from Toxic Air Contaminants: 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 U.S. is attributable to cancer. About two percent of cancer deaths in the U.S. may be attributable to environmental pollution (Doll and Peto 1981). The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods.

Non-Cancer Health Risks from Toxic Air Contaminants: Unlike carcinogens, for most TAC 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 Office of Environmental Health Hazard Assessment (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).

Climate Change

Global climate change is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. Historical records have shown that temperature changes have occurred in the past, such as during previous ice ages. Data indicate that the current temperature record differs from previous climate changes in rate and magnitude. Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs), comparable to a greenhouse, which captures and traps radiant energy. GHGs are emitted by natural processes and human activities. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature. Global warming is the observed increase in average temperature of the earth's surface and atmosphere. The primary cause of global warming is an increase of GHGs in the atmosphere. The six major GHGs are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), and perfluorocarbon (PFCs). The GHGs absorb longwave radiant energy emitted by the Earth, which warms the atmosphere. The GHGs also emit longwave radiation both upward to space and back down toward the surface of the Earth. The downward part of this longwave radiation emitted by the atmosphere is known as the "greenhouse effect." Emissions from human activities such as fossil fuel combustion for electricity production and vehicles have elevated the concentration of these gases in the atmosphere.

CO2 is an odorless, colorless greenhouse gas. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO2 include burning coal, oil, gasoline, natural gas, and wood. CH4 is a flammable gas and is the main component of natural gas. N2O, also known as laughing gas, is a colorless greenhouse gas. Some industrial processes such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions also contribute to the atmospheric load of N2O. HFCs are synthetic man-made chemicals that are used as a substitute for chlorofluorocarbons (whose production was stopped as required by the Montreal Protocol) for automobile air conditioners and refrigerants. The two main sources of PFCs are primary aluminum production and semiconductor manufacture. SF6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Scientific consensus, as reflected in recent reports issued by the United Nations Intergovernmental Panel on Climate Change, is that the majority of the observed warming over the last 50 years can be attributable to increased concentration of GHGs in the atmosphere due to human activities. Industrial activities, particularly increased consumption of fossil fuels (e.g., gasoline, diesel, wood, coal, etc.), have heavily contributed to the increase in atmospheric levels of GHGs. The United Nations Intergovernmental Panel on Climate Change constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. It

concluded that a stabilization of greenhouse gases at 400 to 450 ppm carbon dioxide-equivalent concentration is required to keep global mean warming below two degrees Celsius, which has been identified as necessary to avoid dangerous impacts from climate change.

The potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, air quality impacts, and sea level rise. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other disease carrying insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding, hurricanes, and wildfires can displace people and agriculture, which would have negative consequences. Drought in some areas may increase, which would decrease water and food availability. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

The impacts of climate change will also affect projects in various ways. Effects of climate change are rising sea levels and changes in snow pack. The extent of climate change impacts at specific locations remains unclear. It is expected that Federal, State and local agencies will more precisely quantify impacts in various regions. As an example, it is expected that the California Department of Water Resources will formalize a list of foreseeable water quality issues associated with various degrees of climate change. Once state government agencies make these lists available, they could be used to more precisely determine to what extent a project creates global climate change impacts.

Federal

Greenhouse Gas Endangerment Findings: On December 7, 2009, the USEPA Administrator signed two distinct findings regarding greenhouse gases pursuant to CAA §202 (a). The Endangerment Finding stated that CO2, CH4, N2O, HFCs, PFCs, and SF6 taken in combination endanger both the public health and the public welfare of current and future generations. The *Cause or Contribute Finding* stated that the combined emissions from motor vehicles and motor vehicle engines contribute to the greenhouse gas air pollution that endangers public health and welfare. These findings were a prerequisite for implementing GHG standards for vehicles. The USEPA and the National Highway Traffic Safety Administration (NHTSA) finalized emission standards for light-duty vehicles in May 2010 and for heavy-duty vehicles in August of 2011.

Renewable Fuel Standard: The Renewable Fuel Standard (RFS) program was established under the Energy Policy Act (EPAct) of 2005, and required 7.5 billion gallons of renewable-fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act (EISA) of 2007, the RFS program was expanded to include diesel, required the volume of renewable fuel blended into transportation fuel be increased from nine billion gallons in 2008 to 36 billion gallons by 2022, established new categories of renewable fuel and required USEPA to apply lifecycle GHG performance threshold standards so that each category of renewable fuel emits fewer greenhouse gases than the petroleum fuel it replaces. The RFS is expected to reduce greenhouse gas emissions by 138 million metric

tons[6], about the annual emissions of 27 million passenger vehicles, replacing about seven percent of expected annual diesel consumption and decreasing oil imports by $41.5 billion.

GHG Tailoring Rule: On May 13, 2010, USEPA finalized the GHG Tailoring Rule to phase in the applicability of the Prevention of Significant Deterioration (PSD) and Title V operating permit programs for GHGs. The GHG Tailoring Rule was tailored to include the largest GHG emitters, while excluding smaller sources (restaurants, commercial facilities and small farms). The first phase (from January 2, 2011 to June 30, 2011) addressed the largest sources that contributed 65 percent of the stationary GHG sources. Title V GHG requirements were triggered only when affected facility owners/operators were applying, renewing or revising their permits for non-GHG pollutants. PSD GHG requirements were applicable only if sources were undergoing permitting actions for other non-GHG pollutants and the permitted action would increase GHG emission by 75,000 metric tons of CO2 equivalent emissions (CO2e) per year or more.

The second phase (from July 1, 2011 to June 30, 2013) included sources that emit or have the potential to emit 100,000 of CO2e metric tons per year or more. Newly constructed sources that are not major sources for non-GHG pollutants would not be subject to PSD GHG requirements unless it emits 100,000 metric tons of CO2e per year or more. Modifications to a major source would not be subject to PSD GHG requirements unless it generates a net increase of 75,000 metric tons of CO2e per year or more. Sources not subject to Title V would not be subject to Title V GHG requirements unless 100,000 metric tons of CO2e per year or more would be emitted.

The third phase of the GHG Tailoring Rule, finalized on July 12, 2012, determined not to lower the current PSD and Title V applicability thresholds for GHG-emitting sources established in the GHG Tailoring Rule for phases 1 and 2. The GHG Tailoring Rule also promulgated regulatory revisions for better implementation of the federal program for establishing plantwide applicability limitations (PALs) for GHG emissions, which will improve the administration of the GHG PSD permitting programs.

GHG Reporting Program: USEPA issued the Mandatory Reporting of Greenhouse Gases Rule (40 CFR Part 98) under the 2008 Consolidated Appropriations Act. The Mandatory Reporting of Greenhouse Gases Rule requires reporting of GHG data from large sources and suppliers under the Greenhouse Gas Reporting Program (GHGRP). Suppliers of certain products that would result in GHG emissions if released, combusted or oxidized; direct emitting source categories; and facilities that inject CO2 underground for geologic sequestration or any purpose other than geologic sequestration are included. Facilities that emit 25,000 metric tons or more per year of GHGs as CO2e are required to submit annual reports to USEPA. For the 2010 calendar, there were 6,260 entities that reported GHG data under this program, and 467 of the entities were from California. Of the 3,200 million metric tons of CO2e that were reported nationally, 112 million metric tons of CO2e were from California. Power plants were the largest stationary source of direct U.S. GHG emissions with 2,326 million metric tons of CO2e, followed by refineries with 183 million metric tons of CO2e. CO2 emissions accounted for largest share of direct emissions with

[6] One metric ton is equal to 2, 205 pounds.

95 percent, followed by CH4 with four percent, and N2O and fluorinated gases representing the remaining one percent.

State

Executive Order S-3-05: In June 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established emission reduction targets. The goals would reduce GHG emissions to 2000 levels by 2010, then to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

AB 32 - Global Warming Solutions Act: On September 27, 2006, AB 32, the California Global Warming Solutions Act of 2006, was signed by Governor Schwarzenegger. AB 32 expanded on Executive Order S-3-05. The California legislature stated that "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." AB 32 represents the first enforceable state-wide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 lays out a program to inventory and reduce greenhouse gas emissions in California and from power generation facilities located outside the state that serve California residents and businesses. AB 32 requires CARB to:

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions by January 1, 2008;
- Adopt mandatory reporting rules for significant sources of GHG by January 1, 2008;
- Adopt a GHG emissions reduction plan by January 1, 2009, indicating how the GHG emissions reductions will be achieved via regulations, market mechanisms, and other actions; and
- Adopt regulations to achieve the maximum technologically feasible and cost-effective reductions of GHG by January 1, 2011.

The combination of Executive Order S-3-05 and AB 32 will require significant development and implementation of energy efficient technologies and shifting of energy production to renewable sources.

Consistent with the requirement to develop an emission reduction plan, CARB prepared a Scoping Plan indicating how GHG emission reductions will be achieved through regulations, market mechanisms, and other actions. The Scoping Plan was released for public review and comment in October 2008 and approved by CARB on December 11, 2008. The Scoping Plan calls for reducing GHG emissions to 1990 levels by 2020. This means cutting approximately 30 percent from business-as-usual (BAU) emission levels projected for 2020, or about 15 percent from today's levels. Key elements of CARB staff's recommendations for reducing California's GHG emissions to 1990 levels by 2020 contained in the Scoping Plan include the following:

- Expansion and strengthening of existing energy efficiency programs and building and appliance standards;
- Expansion of the Renewables Portfolio Standard to 33 percent;
- Development of a California cap-and-trade program that links with other Western Climate Initiative (WCI) partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gases and pursuing policies and incentives to achieve those targets;
- Adoption and implementation of existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS); and
- Targeted fees, including a public good charge on water use, fees on high global warming potential (GWP) gases and a fee to fund the state's long-term commitment to AB 32 administration.

In response to the comments received on the Draft Scoping Plan and at the November 2008 public hearing, CARB made a few changes to the Draft Scoping Plan, primarily to:

- State that California "will transition to 100 percent auction" of allowances and expects to "auction significantly more [allowances] than the Western Climate Initiative minimum;"
- Make clear that allowance set-asides could be used to provide incentives for voluntary renewable power purchases by businesses and individuals and for increased energy efficiency;
- Make clear that allowance set-asides can be used to ensure that voluntary actions, such as renewable power purchases, can be used to reduce greenhouse gas emissions under the cap;
- Provide allowances are not required from carbon neutral projects; and
- Mandate that commercial recycling be implemented to replace virgin raw materials with recyclables.

SB 97 – CEQA, Greenhouse Gas Emissions: On August 24, 2007, Governor Schwarzenegger signed into law SB 97 – CEQA: Greenhouse Gas Emissions, and stated, "This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions." As directed by SB 97, the Natural Resources Agency adopted amendments to the CEQA Guidelines for GHG emissions on December 30, 2009 to provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments did not establish a threshold for significance for GHG emissions. The amendments became effective on March 18, 2010.

***OPR - Technical Advisory on CEQA and Climate Change*:** Consistent with SB 97, on June 19, 2008, OPR released its "Technical Advisory on CEQA and Climate Change," which was developed in cooperation with the Resources Agency, the CalEPA, and the CARB. According to OPR, the "Technical Advisory" offers the informal interim guidance regarding the steps lead agencies should take to address climate change in their CEQA documents, until CEQA guidelines are developed pursuant to SB 97 on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.

According to OPR, lead agencies should determine whether greenhouse gases may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source. Second, the lead agency must assess whether those emissions are individually or cumulatively significant. When assessing whether a project's effects on climate change are "cumulatively considerable" even though its GHG contribution may be individually limited, the lead agency must consider the impact of the project when viewed in connection with the effects of past, current, and probable future projects. Finally, if the lead agency determines that the GHG emissions from the project as proposed are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

In 2009, total California greenhouse gas emissions were 457 million metric tons of CO2e (MMTCO2e); net emissions were 453 MMTCO2e, reflecting the influence of sinks (net CO2 flux from forestry). While total emissions have increased by 5.5 percent from 1990 to 2009, emissions decreased by 5.8 percent from 2008 to 2009 (485 to 457 MMTCO2e). The total net emissions between 2000 and 2009 decreased from 459 to 453 MMTCO2e, representing a 1.3 percent decrease from 2000 and a 6.1 percent increase from the 1990 emissions level. The transportation sector accounted for approximately 38 percent of the total emissions, while the industrial sector accounted for approximately 20 percent. Emissions from electricity generation were about 23 percent with almost equal contributions from in-state and imported electricity.

Per capita emissions in California have slightly declined from 2000 to 2009 (by 9.7 percent), but the overall nine percent increase in population during the same period offsets the emission reductions. From a per capita sector perspective, industrial per capita emissions have declined 21 percent from 2000 to 2009, while per capita emissions for ozone depleting substance (ODS) substitutes saw the highest increase (52 percent).

From a broader geographical perspective, the state of California ranked second in the U.S. for 2007 greenhouse gas emissions, only behind Texas. However, from a per capita standpoint, California had the 46th lowest GHG emissions. On a global scale, California had the 14th largest carbon dioxide emissions and the 19th largest per capita emissions. The GHG inventory is divided into three categories: stationary sources, on-road mobile sources, and off-road mobile sources.

AB 1493 Vehicular Emissions - CO2: Prior to the USEPA and NHTSA joint rulemaking, Governor Schwarzenegger signed Assembly Bill AB 1493 (2002). AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks

and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

CARB originally approved regulations to reduce GHGs from passenger vehicles in September 2004, with the regulations to take effect in 2009 (see amendments to CCR Title 13 §§1900 and 1961 (13 CCR 1900, 1961), and the adoption of CCR Title 13 §1961.1 (13 CCR 1961.1)). California's first request to the USEPA to implement GHG standards for passenger vehicles was made in December 2005 and subsequently denied by the USEPA in March 2008. The USEPA then granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks and sport utility vehicles on June 30, 2009.

On April 1, 2010, CARB filed amended regulations for passenger vehicles as part of California's commitment toward the national program to reduce new passenger vehicle GHGs from 2012 through 2016. The amendments will prepare California to harmonize its rules with the federal Light-Duty Vehicle GHG Standards and CAFE Standards.

SB 1368: SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the CPUC to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The CEC was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further required that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Executive Order S-1-07: Governor Schwarzenegger signed Executive Order S-1-07 in 2007 which established the transportation sector as the main source of GHG emissions in California. Executive Order S-1-07 proclaims that the transportation sector accounts for over 40 percent of statewide GHG emissions. Executive Order S-1-07 also establishes a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020.

In particular, Executive Order S-1-07 established the LCFS and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. The analysis supporting development of the protocols was included in the SIP for alternative fuels (State Alternative Fuels Plan adopted by CEC on December 24, 2007) and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the LCFS on April 23, 2009.

SB 375: SB 375, signed into law in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. As part of the alignment, SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) which prescribes land use allocation in that MPO's Regional Transportation Plan (RTP). CARB, in consultation with MPOs, is required to provide each affected region with

reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned GHG emission reduction targets. If MPOs do not meet the GHG reduction targets, transportation projects located in the MPO boundaries would not be eligible for funding programmed after January 1, 2012.

CARB appointed the Regional Targets Advisory Committee (RTAC), as required under SB 375, on January 23, 2009. The RTAC's charge was to advise CARB on the factors to be considered and methodologies to be used for establishing regional targets. The RTAC provided its recommendation to CARB on September 29, 2009. CARB was required to adopt final targets by September 30, 2010.

Executive Order S-13-08: Governor Schwarzenegger signed Executive Order S-13-08 on November 14, 2008 which directed California to develop methods for adapting to climate change through preparation of a statewide plan. Executive Order S-13-08 directed OPR, in cooperation with the Resources Agency, to provide land use planning guidance related to sea level rise and other climate change impacts by May 30, 2009. Executive Order S-13-08 also directed the Resources Agency to develop a state Climate Adaptation Strategy by June 30, 2009 and to convene an independent panel to complete the first California Sea Level Rise Assessment Report. The assessment report was required to be completed by December 1, 2010 and required to meet the following four criteria:

1. Project the relative sea level rise specific to California by taking into account issues such as coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;
2. Identify the range of uncertainty in selected sea level rise projections;
3. Synthesize existing information on projected sea level rise impacts to state infrastructure (e.g., roads, public facilities, beaches), natural areas, and coastal and marine ecosystems; and
4. Discuss future research needs relating to sea level rise in California.

SB 1078, SB 107 and Executive Order S-14-08: SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020.

SB X-1-2: SB X1-2 was signed by Governor Brown in April 2011. SB X1-2 created a new Renewables Portfolio Standard (RPS), which pre-empted CARB's 33 percent Renewable Electricity Standard. The new RPS applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. These entities must adopt the new RPS goals of 20 percent of retails sales

from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement by the end of 2020.

Executive Order B-30-15: Governor Brown signed Executive Order B-30-15 in April 2015 to establish a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. This is the most aggressive benchmark enacted by any government in North America to reduce carbon emissions over the next decade and a half. California is on track to meet or exceed the current target of reducing greenhouse gas emissions to 1990 levels by 2020, as established by AB32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050.

SCAQMD

The SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the AQMP. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include support of the adoption of a California GHG emission reduction goal.

Basin GHG Policy and Inventory: The SCAQMD has established a policy, adopted by the SCAQMD Governing Board at its September 5, 2008 meeting, to actively seek opportunities to reduce emissions of criteria, toxic, and climate change pollutants. The policy includes the intent to assist businesses and local governments implementing climate change measures, decrease the agency's carbon footprint, and provide climate change information to the public. The SCAQMD will take the following actions:

1. Work cooperatively with other agencies/entities to develop quantification protocols, rules, and programs related to greenhouse gases;
2. Share experiences and lessons learned relative to SCAQMD Regulation XX - Regional Clean Air Incentives Market (RECLAIM), to help inform state, multi-state, and federal development of effective, enforceable cap-and-trade programs. To the extent practicable, staff will actively engage in current and future regulatory development to ensure that early actions taken by local businesses to reduce greenhouse gases will be treated fairly and equitably. SCAQMD staff will seek to streamline administrative procedures to the extent feasible to facilitate the implementation of AB 32 measures;
3. Review and comment on proposed legislation related to climate change and greenhouse gases, pursuant to the 'Guiding Principles for SCAQMD Staff Comments on Legislation Relating to Climate Change' approved at the SCAQMD Governing Board's Special Meeting in April 2008;
4. Provide higher priority to funding Technology Advancement Office (TAO) projects or contracts that also reduce greenhouse gas emissions;
5. Develop recommendations through a public process for an interim greenhouse gas CEQA significance threshold, until such time that an applicable and appropriate statewide greenhouse gas significance level is established. Provide guidance on

analyzing greenhouse gas emissions and identify mitigation measures. Continue to consider GHG impacts and mitigation in SCAQMD lead agency documents and in comments when SCAQMD is a responsible agency;

6. Revise the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning to include information on greenhouse gas strategies as a resource for local governments. The Guidance Document will be consistent with state guidance, including CARB's Scoping Plan;
7. Update the Basin's greenhouse gas inventory in conjunction with each Air Quality Management Plan. Information and data used will be determined in consultation with CARB, to ensure consistency with state programs. Staff will also assist local governments in developing greenhouse gas inventories;
8. Bring recommendations to the SCAQMD Governing Board on how the agency can reduce its own carbon footprint, including drafting a Green Building Policy with recommendations regarding SCAQMD purchases, building maintenance, and other areas of products and services. Assess employee travel as well as other activities that are not part of a GHG inventory and determine what greenhouse gas emissions these activities represent, how they could be reduced, and what it would cost to offset the emissions;
9. Provide educational materials concerning climate change and available actions to reduce greenhouse gas emissions on the SCAQMD website, in brochures, and other venues to help cities and counties, businesses, households, schools, and others learn about ways to reduce their electricity and water use through conservation or other efforts, improve energy efficiency, reduce vehicle miles traveled, access alternative mobility resources, utilize low emission vehicles and implement other climate friendly strategies; and
10. Conduct conferences, or include topics in other conferences, as appropriate, related to various aspects of climate change, including understanding impacts, technology advancement, public education, and other emerging aspects of climate change science.

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. SCAQMD's recommended interim GHG significance threshold proposal uses a tiered approach to determining significance. Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. Tier 2 consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. Tier 3 establishes a screening significance threshold level to determine significance using a 90 percent emission capture rate approach, which corresponds to 10,000 metric tons of CO2 equivalent emissions per year (MTCO2e/year). Tier 4, to be based on performance standards, is yet to be developed. Under Tier 5 the project proponent would allow offsets to reduce GHG emission impacts to less than the proposed screening level. If CARB adopts statewide significance thresholds, SCAQMD staff plans to report back to the SCAQMD Governing Board regarding any recommended changes or additions to the SCAQMD's interim threshold.

Table 3-3 presents the GHG emission inventory by major source categories in calendar year 2008, as identified in the 2012 AQMP for the South Coast Air Basin. The emissions reported herein are based on in-basin energy consumption and do not include out-of-basin energy production (e.g., power plants, crude oil production) or delivery emissions (e.g., natural gas pipeline loss). Three major GHG pollutants have been included: CO2, N2O, and CH4. These GHG emissions are reported in MMTCO2e. Mobile sources generate 59.4 percent of the emissions, and include airport equipment, and oil and gas drilling equipment. The remaining 40.6 percent of the total Basin GHG emissions are from stationary and area sources. The largest stationary/area source is fuel combustion, which is 27.8 percent of the total Basin GHG emissions (68.6 percent of the GHG emissions from the stationary and area source category).

Air Quality – Ozone Depletion

The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) is an international treaty designed to phase out halogenated hydrocarbons such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), which are considered ODSs. The Montreal Protocol was first signed in September 16, 1987 and has been revised seven times. The U.S. ratified the original Montreal Protocol and each of its revisions.

Federal

Under the CAA Title VI, the USEPA is assigned responsibility for implementing programs that protect the stratospheric ozone layer. 40 CFR Part 82 contains USEPA's regulations specific to protecting the ozone layer. These USEPA regulations phase out the production and import of ozone depleting substances (ODSs) consistent with the Montreal Protocol. ODSs are typically used as refrigerants or as foam blowing agents. ODS are regulated as Class I or Class II controlled substances. Class I substances have a higher ozone-depleting potential and have been completely phased out in the U.S., except for exemptions allowed under the Montreal Protocol. Class II substances are HCFCs, which are transitional substitutes for many Class I substances and are being phased out.

Table 3-3
2008 GHG Emissions for the South Coast Air Basin

		Emission (TPD)			Emission (TPY)			MMTONS
CODE	**Source Category**	**CO2**	**N2O**	**CH4**	**CO2**	**N2O**	**CH4**	**CO2e**
	Fuel Combustion							
10	Electric Utilities	34,303	.08	0.71	12,520,562	29.0	258	11.4
20	Cogeneration	872	.00	0.02	318,340	0.60	6.00	0.29
30	Oil and Gas Production (combustion)	2,908	.01	0.08	1,061,470	4.71	29.5	0.96
40	Petroleum Refining (Combustion)	44,654	.06	0.57	16,298,766	20.7	207	14.8
50	Manufacturing and Industrial	22,182	.06	0.48	8,096,396	20.9	174	7.35
52	Food and Agricultural Processing	927	00	0.02	338,516	0.84	7.16	0.31
60	Service and Commercial	21,889	0.08	0.59	7,989,416	30.8	215	7.26
99	Other (Fuel Combustion)	2,241	0.2	0.16	818,057	8.58	58	0.75
Total Fuel Combustion		**129,977**	**0.32**	**2.62**	**47,441,523**	**116**	**956**	**43.1**
	Waste Disposal							
110	Sewage Treatment	26.4	0.00	0.00	9,653	0.12	1.50	0.01
120	Landfills	3,166	0.04	505	1,155,509	14.0	184,451	4.57
130	Incineration	580	0.00	0.02	211,708	0.81	5.48	0.19
199	Other (Waste Disposal)			2.25	0	0.00	820	0.02
Total Waste Disposal		**3,772**	**0.04**	**508**	**1,376,870**	**14.9**	**185,278**	**4.78**
	Cleaning and Surface Coatings							
210	Laundering							
220	Degreasing							
230	Coatings and Related Processes	27.1	0.00	0.21	9,890	0.02	78.0	0.01
240	Printing			0.00	0	0.00	0.00	0.00
250	Adhesives and Sealants			0.00	0	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	2,621	0.00	0.12	956,739	1.20	43.9	0.87
Total Cleaning and Surface Coatings		**2,648**	**0.00**	**0.33**	**966,628**	**1.22**	**122**	**0.88**
	Petroleum Production and Marketing							
310	Oil and Gas Production	92.1	0.00	0.92	33,605	0.06	336	0.04
320	Petroleum Refining	770	0.00	1.65	280,932	0.36	603	0.27
330	Petroleum Marketing			83.8	0	0.00	30,598	0.58
399	Other (Petroleum Production and Marketing)			0.00	0	0.00	0	0.00
Total Petroleum Production and Marketing		**862**	**0.00**	**86.4**	**314,536**	**0.42**	**31,537**	**0.89**

Table 3-3 (Continued)
2008 GHG Emissions for the South Coast Air Basin

		Emission (TPD)			Emission (TPY)			MMTONS
CODE	**Source Category**	**CO2**	**N2O**	**CH4**	**CO2**	**N2O**	**CH4**	**CO2e**
Industrial Processes								
410	Chemical			0.92	0	0.00	337	0.01
420	Food and Agriculture			0.02	0	0.00	7.10	0.00
430	Mineral Processes	279	0.00	0.05	101,804	0.19	17.3	0.09
440	Metal Processes			0.02	0	0.00	9.10	0.00
450	Wood and Paper			0.00	0	0.00	0.00	0.00
460	Glass and Related Products			0.00	0	0.00	0.90	0.00
470	Electronics			0.00	0	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.00	0.47	28	0.00	172	0.00
Total Industrial Processes		**279**	**0.00**	**1.49**	**101,832**	**0.19**	**543**	**0.10**
Solvent Evaporation								
510	Consumer Products			0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent			0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers			0.00	0.00	0.00	0.00	0.00
540	Asphalt Paving/Roofing			0.07	0.00	0.00	24.20	0.00
Total Solvent Evaporation		**0.00**	**0.00**	**0.07**	**0.00**	**0.00**	**24.20**	**0.00**
Miscellaneous Processes								
610	Residential Fuel Combustion	38,850	0.12	0.95	14,180,326	45.3	347	12.9
620	Farming Operations			25.6	0.00	0.00	9,354	0.18
630	Construction and Demolition			0.00	0.00	0.00	0	0.00
640	Paved Road Dust			0.00	0.00	0.00	0	0.00
645	Unpaved Road Dust			0.00	0.00	0.00	0	0.00
650	Fugitive Windblown Dust			0.00	0.00	0.00	0	0.00
660	Fires			0.08	0.00	0.00	30.9	0.00
670	Waste Burning and Disposal			0.58	0.00	0.00	212	0.00
680	Utility Equipment				0.00	0.00		0.00
690	Cooking			0.64	0.00	0.00	235	0.00
699	Other (Miscellaneous Processes			0.00	0.00	0.00	0	0.00
Total Miscellaneous Processes		**38,850**	**0.12**	**27.9**	**14,180,326**	**45.3**	**10,179**	**13.1**

Table 3-3 (Concluded)
2008 GHG Emissions for the South Coast Air Basin

		Emission (TPD)			Emission (TPY)			MMTONS
CODE	**Source Category**	**CO2**	**N2O**	**CH4**	**CO2**	**N2O**	**CH4**	**CO2e**
On-Road Motor Vehicles								
710	Light Duty Passenger Auto (LDA)	84,679	2.72	3.62	30,907,957	993	1,321	28.3
722	Light Duty Trucks 1 (T1 : up to 3750 lb.)	22,319	0.72	0.96	8,146,321	263	350	7.47
723	Light Duty Trucks 2 (T2 : 3751-5750 lb.)	33,495	1.08	1.43	12,225,619	392	523	11.2
724	Medium Duty Trucks (T3 : 5751-8500 lb.)	29,415	0.94	1.25	10,736,309	343	456	9.85
732	Light Heavy Duty Gas Trucks 1 (T4 : 8501-10000 lb.)	8,195	0.16	0.21	2,991,059	57.3	76.7	2.73
733	Light Heavy Duty Gas Trucks 2 (T5 : 10001-14000 lb.)	1,116	0.05	0.07	407,174	19.0	25.6	0.38
734	Medium Heavy Duty Gas Trucks (T6 : 14001-33000 lb.)	727	0.02	0.20	265,506	5.48	73.0	0.24
736	Heavy Heavy Duty Gas Trucks ((HHDGT > 33000 lb.)	102	0.01	0.01	37,198	2.19	2.56	0.03
742	Light Heavy Duty Diesel Trucks 1 (T4 : 8501-10000 lb.)	2,166	0.02	0.02	790,600	6.94	7.30	0.72
743	Light Heavy Duty Diesel Trucks 2 (T5 : 10001-14000 lb.)	735	0.01	0.01	268,413	2.56	2.92	0.24
744	Medium Heavy Duty Diesel Truck (T6 : 14001-33000 lb.)	5,422	0.02	0.02	1,978,974	8.40	8.76	1.80
746	Heavy Heavy Duty Diesel Trucks (HHDDT > 33000 lb.)	17,017	0.05	0.05	6,211,247	17.5	16.4	5.64
750	Motorcycles (MCY)	7,959	0.26	0.34	2,904,910	94.9	124	2.66
760	Diesel Urban Buses (UB)	2,135	0.00	0.00	779,389	1.46	1.46	0.71
762	Gas Urban Buses (UB)	166	0.02	0.02	60,654	8.40	6.94	0.06
770	School Buses (SB)	337	0.00	0.00	122,995	1.46	1.46	0.11
776	Other Buses (OB)	927	0.00	0.00	338,430	0.73	0.73	0.31
780	Motor Homes (MH)	568	0.03	0.04	207,431	11.0	14.6	0.19
Total On-Road Motor Vehicles		**217,480**	**6.11**	**8.26**	**79,380,188**	**155**	**187**	**72.7**
Other Mobile Sources								
810	Aircraft	37,455	0.10	0.09	13,670,930	36.5	31.8	12.4
820	Trains	586	0.00	0.00	213,835	0.45	1.38	0.19
830	Ships and Commercial Boats	3,452	0.01	0.02	1,259,927	2.64	8.13	1.14
	Other Off-road sources (construction equipment, airport equipment, oil and gas drilling equipment)	16,080	1.72	8.84	5,869,123	628	3,226	5.56
Total Other Mobile Sources		**57,572**	**1.83**	**8.95**	**21,013,816**	**668**	**3,268**	**19.3**
Total Stationary and Area Sources		**176,388**	**0.49**	**626**	**64,381,716**	**178**	**228,639**	**63**
Total On-Road Vehicles		**217,480**	**6.11**	**8.26**	**79,380,188**	**155**	**187**	**73**
Total Other Mobile*		**57,572**	**1.83**	**8.95**	**21,013,816**	**668**	**3,268**	**19**
Total 2008 Baseline GHG Emissions for Basin		**451,440**	**8.42**	**644**	**164,775,719**	**1,001**	**232,094**	**155**

State

AB 32 - Global Warming Solutions Act: Some ODSs exhibit high global warming potentials. CARB developed a cap and trade regulation under AB 32. The cap and trade regulation includes the Compliance Offset Protocol Ozone Depleting Substances Projects, which provides methods to quantify and report GHG emission reductions associated with the destruction of high global warming potential ODS sourced from and destroyed within the U.S. that would have otherwise been released to the atmosphere. The protocol must be used to quantify and report GHG reductions under the ARB's GHG Cap and Trade Regulation.

Refrigerant Management Program: As part implementing AB 32, CARB also adopted a Refrigerant Management Program in 2009. The Refrigerant Management Program is designed to reduce GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal.

HFC Emission Reduction Measures for Mobile Air Conditioning - Regulation for Small Containers of Automotive Refrigerant: The Regulation for Small Containers of Automotive Refrigerant applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. Emission reductions are achieved through implementation of four requirements: 1) use of a self-sealing valve on the container, 2) improved labeling instructions, 3) a deposit and recycling program for small containers, and 4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010 with a one-year sell-through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90 percent, and rose to 95 percent beginning January 1, 2012.

SCAQMD

The SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy targeted a transition away from CFCs as an industrial refrigerant and propellant in aerosol cans. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives for ODSs:

- phase out the use and corresponding emissions of CFCs, methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995;
- phase out the large quantity use and corresponding emissions of HCFCs by the year 2000;
- develop recycling regulations for HCFCs; and
- develop an emissions inventory and control strategy for methyl bromide.

SCAQMD Rule 1122 – Solvent Degreasers: SCAQMD Rule 1122 applies to all persons who own or operate batch-loaded cold cleaners, open-top vapor degreasers, all types of conveyorized degreasers, and air-tight and airless cleaning systems that carry out solvent degreasing operations with a solvent containing VOCs or with a NESHAP halogenated solvent. Some ODSs such as carbon tetrachloride and TCA are NESHAP halogenated solvents.

SCAQMD Rule 1171 – Solvent Cleaning Operations: SCAQMD Rule 1171 reduces emissions of VOCs, TACs, and stratospheric ozone-depleting or globalwarming compounds from the use, storage and disposal of solvent cleaning materials in solvent cleaning operations and activities

SCAQMD Rule 1411 - Recovery or Recycling of Refrigerants from Motor Vehicle Air Conditioners: Rule 1411 prohibits release or disposal of refrigerants used in motor vehicle air conditioners and prohibits the sale of refrigerants in containers which contain less than 20 pounds of refrigerant.

SCAQMD Rule 1415 - Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems: Rule 1415 reduces emissions of high-global warming potential refrigerants from stationary air conditioning systems by requiring persons subject to this rule to reclaim, recover, or recycle refrigerant and to minimize refrigerant leakage.

SCAQMD Rule 1418 - Halon Emissions from Fire Extinguishing Equipment: Rule 1418 reduce halon emissions by requiring the recovery and recycling of halon from fire extinguishing systems, by limiting the use of halon to specified necessary applications, and by prohibiting the sale of portable halon fire extinguishers that contain less than five pounds of halon.

CHAPTER 4

ENVIRONMENTAL IMPACTS

INTRODUCTION

The CEQA Guidelines require environmental documents to identify significant environmental effects that may result from a proposed project [CEQA Guidelines §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 §15126.4].

The CEQA Guidelines indicate that the degree of specificity required in a CEQA document depends on the type of project being proposed [CEQA Guidelines §15146]. The detail of the environmental analysis for certain types of projects cannot be as great as for others. Accordingly, this Final SEA analyzes impacts on a regional level and impacts on the level of individual industries or individual facilities only where feasible.

The categories of environmental impacts to be studied in a CEQA document are established by CEQA [Public Resources Code, §21000 et seq.], and the CEQA Guidelines, as promulgated by the State of California Secretary of Natural Resources. Under the CEQA Guidelines, there are approximately 17 environmental categories in which potential adverse impacts from a project are evaluated. The proposed project is a modification of the most recent project (December 2015 Final SEA, certified on December 4, 2015) and this analysis considers only the incremental effects of the currently proposed project. This Final SEA focuses on air quality as the area that may be adversely affected by the proposed project, as the proposed amendments do not affect the other environmental topic areas. Please see the 2015 Final SEA and the 2007 Final EA for analysis of the other environmental topic areas.

POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Pursuant to CEQA, and as discussed above, an analysis of the 17 environmental topic areas was previously conducted for this project (2015 Final SEA and the 2007 Final EA). Of the 17 potential environmental impact categories, one topic (air quality and greenhouse gases) was identified as being potentially adversely affected by the proposed project for potential foregone air quality emission reductions.

The topic of air quality emissions is further evaluated in detail in this Final SEA. The environmental impact analysis for this environmental topic 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. The CEQA air quality analysis is considered a "worst-case" analysis because significance determinations for operational emissions are based on the maximum or peak daily allowable emissions during the operational phase. 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 environmental impacts associated with the implementation of the proposed project.

AIR QUALITY AND GHG EMISSIONS

The proposed project consists of amending Rule 1110.2, which would provide the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, relief from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022. For the purposes of this analysis, the affected equipment consists of biogas engines. This equipment is currently regulated by SCAQMD Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines.

Due to the fact that this facility has entered into a power purchase agreement (PPA), and the affected equipment is scheduled to be removed permanently by 2022, the proposed project would provide relief for the specific affected equipment from Rule 1110.2.

Significance Criteria

To determine whether air quality impacts from adopting and implementing the proposed project 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. The proposed project will be considered to have significant adverse air quality impacts if any one of the thresholds in Table 4-1 are equaled or exceeded.

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. 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]**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	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 CO2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO2 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)	
PM10 24-hour average annual average	 10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
PM2.5 24-hour average	 10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation)	
Ambient Air Quality Standards for Criteria Pollutants [d]		
SO2 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 CO2eq = metric tons per year of CO2 equivalents > = greater than

Project-Specific Air Quality and GHG Emissions Impacts

At this time, PAR 1110.2 impacts only one biogas facility located in the SCAQMD jurisdiction (see Figure 2-1). The proposed project consists of amending Rule 1110.2, which would provide the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, which is located at 32250 La Pata Ave, San Juan Capistrano, CA 92675, relief from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has submitted a detailed retirement plan, approved by the Executive Officer, for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022. The proposed project will ~~delay the~~ result in additional emissions foregone (from this one facility) from 2017 through 2022 that were not previously analyzed in the December 2015 SEA ~~from 2018 until 2022~~ (see Table 4-2).

There are no construction-related activities associated with the proposed project, and therefore, no construction-related impacts are expected to occur.

The emissions ~~affected~~ foregone by the proposed project ~~and delay of emission reductions~~ are nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs). Emissions of particulate matter (PM10), and sulfur oxides (SOx) are not expected to change compared with the analysis done in the 2015 Final SEA because Rule 1110.2 control equipment does not affect any of these emissions. Any potential air quality impact from the proposed rule is considered in this CEQA analysis.

The proposed project would relieve biogas facilities meeting specific criteria from the compliance dates outlined in Rule 1110.2, and therefore, there would be adjustments to the annual operational NOx, CO and VOC emission reductions. Currently, there is only one biogas facility in the SCAQMD jurisdiction that would meet the criteria outlined in the proposed project. Table 4-2 summarizes the amount of emission reductions foregone from the proposed project compared to current Rule 1110.2.

Table 4-2
PAR 1110.2 ~~Delayed~~ Foregone Emission Reductions

Type of Project	NOx (tpd)	VOC (tpd)	CO (tpd)
Provide MM PRIMA DESHECHA ENERGY facility relief from the emissions requirements specified in Table III-B of Rule 1110.2	**0.07**	0.01	0.08
CEQA Operating Significance Thresholds	**0.0275**	**0.0275**	**0.275**
Significant?	**Yes**	**No**	**No**

NOx, CO, and VOC emission reductions for PAR 1110.2 are ~~delayed~~ foregone from 2017 through 2022 compared with Rule 1110.2, but a portion of these emissions are not permanently foregone. The quantity of peak daily NOx emission reductions ~~delayed~~ foregone from 2017 through 2022 exceeds the SCAQMD's CEQA significance threshold for operation. Thus, PAR 1110.2 will result in adverse significant operational air quality impacts.

The peak daily NOx emission reductions foregone for the proposed project exceeds the SCAQMD's CEQA significance threshold for operation of 55 lbs/day. When the affected facility permanently shuts down all equipment subject to Rule 1110.2 in 2022, the landfill gas currently utilized in the biogas engines will be diverted to the landfill flares for combustion. If the biogas

engines were retrofitted or replaced to be compliant with Rule 1110.2, the increase in emissions from combustion in the landfill flares (107 lbs/day) compared to combustion in Rule 1110.2 compliant biogas engines (76 lbs/day) would be 31 lbs/day, which is below the SCAQMD's CEQA significance threshold of 55 lbs/day for NOx. Therefore, the foregone NOx emission reductions would be significant from 2017 through 2022. After 2022, some of the NOx emission reductions would be recaptured through facility closure and the NOx emission reductions foregone (31 lbs/day) would be less than the SCAQMD's CEQA significance threshold.

GHG Emissions Impacts

Since GHG emissions are based on fuel usage, the GHG emissions will remain the same no matter the type of combustion source. Because there is no add-on control equipment that would affect GHG emissions included in the proposed project, there are no expected reductions or increases in GHG emissions.

Project-Specific Mitigation for Air Quality and GHG Emissions Impacts

As concluded above, the air quality analysis for the proposed project indicates that NOx emission reductions ~~delayed~~ foregone during operation from 2017 through 2022 exceed the applicable operational significance threshold and are considered to be significant (see Table 4-2). GHG emissions are not impacted, see previous "GHG Emissions Impacts" paragraph for explanation. 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. PAR 1110.2 would provide biogas facilities relief from Rule 1110.2 provided the facility meets certain criteria, and alternatives to the project are no project, adjustments to the compliance dates, installing new flares, or installing new micro turbines, which are addressed in the alternatives analysis found in Chapter 5.

Potential mitigation measures were evaluated. Fortistar, the owner/operator of MM PRIMA DESHECHA ENERGY, LLC, offered potential mitigation options that involved the shutdown of currently operating biogas engines at their Rialto and Coyote Canyon facilities. However, these mitigation options would result in other adverse environmental impacts and were rejected as mitigation for the proposed project by the SCAQMD staff. Additionally, there would be no co-benefit of electricity production from the biogas engines and there would be additional air quality impacts from offsite energy generation. Therefore, no feasible mitigation measures have been identified that would reduce or eliminate the expected foregone NOx emission reductions. Additionally, three project alternatives were evaluated to investigate other options to reduce or avoid potentially significant adverse effects that the proposed project would have on the environment, while achieving the project objectives. These alternatives are discussed in detail in Chapter 5. As concluded in the alternatives analysis in Chapter 5, compared to the project alternatives, the proposed project provides the best balance in achieving the project objectives while minimizing the adverse environmental impacts to air quality. Consequently, the operational air quality emission impacts from the proposed project cannot be mitigated to less than significant. ~~There are no feasible mitigation measures identified at this time that would reduce or eliminate the expected delay in emission reductions~~ foregone~~. Consequently, the operational air quality emissions impacts from the proposed project cannot be mitigated to less than significant.~~ Therefore, Findings and a Statement of Overriding Considerations will be prepared for the Governing Board's consideration and approval prior to the public hearing for the proposed amendments.

Remaining Air Quality and GHG Emissions Impacts

The air quality analysis concluded that significant adverse operational air quality impacts could be created by the proposed amendments because approximately 0.07 tons per day of NOx emission reductions will be ~~delayed~~ foregone from 2017 through 2022. The ~~delayed~~ foregone emission reductions for VOC and CO are below the SCAQMD CEQA significance thresholds.

Cumulative Air Quality and GHG Emissions Impacts

The preceding project-specific analysis concluded that air quality emissions impacts during operation ~~could~~ would be significant from implementing the proposed project. Specifically, ~~delaying~~ NOx, CO, and VOC emission reductions foregone ~~could~~ would exceed the SCAQMD's significance threshold for operational NOx emissions. The ~~delay~~ proposed project does not affect any GHG reductions, see "GHG Emissions Impacts" paragraph as previously discussed in this Chapter. Thus, the air quality emissions impacts during operation are considered to be cumulatively considerable pursuant to CEQA Guidelines §15064 (h)(1). ~~It should be noted, however, all delayed emission reductions will be recaptured over time, so the impacts are not permanent.~~

Even though the proposed project ~~could~~ would result in significant adverse project-specific impacts ~~in delaying~~ from emission reductions foregone during operation from 2017 through 2022, they are not expected to interfere with the air quality progress and attainment demonstration projected in the 2012 AQMP. Further, based on regional modeling analyses performed for the 2012 AQMP, implementing control measures contained in the 2012 AQMP, in addition to the air quality benefits of existing rules with future compliance dates, it is anticipated that the SCAB will be in attainment with all national and most state ambient air quality standards by the year 2014 for the federal 24-hour PM2.5 standard and by the year 2023 for the federal eight-hour ozone standard.

The 2012 AQMP anticipated attainment of the 2006 federal 24-hour PM2.5 standard by 2014, but a Supplement to the 2012 AQMP demonstrated compliance by 2015. Verified preliminary PM2.5 data for 2015, however, supported the need to request a "bump up" in the non-attainment designation to "serious" shifting the attainment to 2019 (10 years since the designation on December 14, 2009). The 1997 federal 8-hour ozone (at 80 ppb) is expected to demonstrate attainment~~ed~~ in 2023 to meet the standard attainment date of June 15, 2024. ~~The proposed delay in emission reductions is expected to be temporary and the affected industries are expected to comply by 2017 before the attainment demonstration years for the 2006 24-hour PM2.5 and 1997 8-hour ozone (80 ppb) of 2019 and 2023, respectively.~~ The foregone NOx emission reductions would be significant from 2017 through 2022. After 2022, some of the NOx emission reductions would be recaptured through facility closure and the NOx emission reductions foregone would be less than the SCAQMD's CEQA significance threshold. Thus, there will be no adverse impact on the progress or attainment demonstration. However, the rate of further progress (time between the base year and the attainment date) would be temporarily adversely affected but other emission reductions are taking place (e.g., annual fleet turnover) that would offset the ~~temporary delay in~~ emission reductions foregone, thus are not considered significant. The upcoming 2016 AQMP will be demonstrating attainment of the 2008 8-hour ozone standard (75 ppb) and 2012 annual PM2.5 standard (12 ug/m3) by 2032 and 2025, respectively~~, which are beyond the years affected (2018-2022) by the delay in emission reductions~~.

Cumulative Mitigation Measures

The analysis indicates that the proposed project could result in ~~a delay of~~ NOx, VOC, and CO emission reductions foregone during operation of the proposed project, ~~and the delay~~ which would

result in ~~permanent~~ adverse significant cumulative air quality emissions impacts. When the affected facility permanently shuts down all equipment subject to Rule 1110.2 in 2022, the landfill gas currently utilized in the biogas engines will be diverted to the landfill flares for combustion. If the biogas engines were retrofitted or replaced to be compliant with Rule 1110.2, the increase in emissions from combustion in the landfill flares (107 lbs/day) compared to combustion in Rule 1110.2 compliant biogas engines (76 lbs/day) would be 31 lbs/day, which is below the SCAQMD's CEQA significance threshold of 55 lbs/day for NOx. Therefore, the foregone NOx emission reductions would be significant from 2017 through 2022. After 2022, some of the NOx emission reductions would be recaptured through facility closure and the NOx emission reductions foregone (31 lbs/day) would be less than the SCAQMD's CEQA significance threshold.

~~However, the compliance delay is temporary and the emissions would be recaptured in future years.~~ There are no feasible mitigation measures which could be included to reduce the cumulative impact of the project. Thus, PAR 1110.2 will result in adverse significant cumulative air quality impacts.

LOCALIZED SIGNIFICANCE THRESHOLD ANALYSIS

The SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the SCAQMD Governing Board's environmental justice initiatives in recognition of the fact that criteria pollutants can have localized impacts as well as regional impacts[1]. LSTs are only applicable to the following criteria pollutants: NOx, CO, PM_{10} and $PM_{2.5}$. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standard at the localized level, and are developed based on the ambient concentrations of that pollutant for each Source Receptor Area (SRA) and distance to the nearest sensitive receptor.

Using the LST methodology, the SCAQMD has developed mass emission lookup tables[2] for projects with daily disturbance areas of five acres or less. These lookup tables were developed using conservative assumptions for the gradual conversion of NOx to NO_2 and use the meteorological data from the specific SRA. If the calculated emissions for the operational activity are below the emission level found in the LST lookup tables, localized air quality impacts from the operational activity are not considered significant.

PAR 1110.2 will affect only one facility, Prima Deshecha, which is located in Source Receptor Area (SRA) 21 – Capistrano Valley. The closest sensitive receptor to the Prima Deshecha facility is located approximately 350 meters to the west-southwest. Since PAR 1110.2 will result in emissions foregone from the two internal combustion engines at Prima Deshecha, the 1-acre lookup tables were used to determine the localized impacts from PAR 1110.2. As shown in Table 4-3 below, operational NOx and CO emissions were found to be below the applicable LSTs. The controls required by PAR 1110.2 do not affect PM_{10} and $PM_{2.5}$ emissions; therefore, the localized air quality impacts from those pollutants are not analyzed here.

[1] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds
[2] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf

Table 4-3
Localized Significance Threshold Screening Evaluation for ~~Delayed~~ Foregone Emission Reductions (lb/day)

Criteria Pollutant	NOx	CO
PAR 1110.2 Emissions Foregone	140	160
LST [(a)]	179	5,050
Exceeds LST?	No	No

(a) Appendix C of the SCAQMD Final LST Methodology (Oct. 2009). To determine the LST for a distance of 350 meters, linear interpolation between the closest two distances in the lookup tables (200 meters and 500 meters) was used.

The NO_X and CO emissions from PAR 1110.2 do not exceed the applicable LSTs; therefore, the localized air quality impacts are considered less than significant.

HEALTH EFFECTS ANALYSIS

Ozone formation is primarily the result of the two criteria pollutants, volatile organic compounds (VOCs) and nitrous oxides (NOx), mixing with sunlight to create a chemical reaction. The proposed project will generate ~~delayed~~ foregone NOx, VOC, and CO emissions from 2017 through 2022, thus ~~temporarily~~ foregoing the health benefit from NOx, VOC, and CO emission reductions originally expected under Rule 1110.2 from the one affected source~~s~~. However, due to extensive knowledge of the health effects from ozone and localized studies of those effects, the following analysis is to assist in determining, qualitatively, the health effects from the operational NOx, VOC, and CO emissions impacts.

Ozone is a highly reactive compound, and is a strong oxidizing agent. When ozone comes into contact with the respiratory tract, it can react with tissues and cause damage in the airways. Since it is a gas, it can penetrate into the gas exchange region of the deep lung.

The U.S. EPA primary federal standard for ozone, adopted in 2008, is 75 ppb averaged over eight hours. The California Air Resources Board (CARB) has established state standards of 90 ppb averaged over one hour and at 70 ppb averaged over eight hours. The approved 2007 Air Quality Management Plan (AQMP) provides a blueprint as to how and when the SCAQMD will attain the 1997 8-hour ozone standard (80 ppb) by year 2023, and the upcoming 2016 AQMP will propose a control strategy to be implemented to demonstrate attainment of the 75 ppb 8-hour ozone standard by 2032.

A number of population groups are potentially at increased risk for ozone exposure effects. In the ongoing review of ozone health studies, the U.S. EPA has identified populations as having adequate evidence for increased risk from ozone exposures, including individuals with asthma, younger and older age groups, and individuals with reduced intake of certain nutrients such as Vitamins C and E, and outdoor workers. There is suggestive evidence for other potential factors, such as variations in genes related to oxidative metabolism or inflammation, gender, socioeconomic status, and obesity. However further study is needed.

The adverse effects reported with short-term ozone exposure are greater with increased activity because activity increases the breathing rate and the volume of air reaching the lungs, resulting in an increased amount of ozone reaching the lungs. Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more

active, and have a higher specific ventilation rate than adults (i.e. after normalization for body mass).

A number of adverse health effects associated with ambient ozone levels have been identified from laboratory and epidemiological studies[3]. These include increased respiratory symptoms, damage to cells of the respiratory tract, decrease in lung function, increased susceptibility to respiratory infection, an increased risk of hospitalization, and increased risk of mortality.

Increases in ozone levels are associated with increased numbers of absences from school. The Children's Health Study, conducted by researchers at the University of Southern California, followed a cohort of children that live in 12 communities in Southern California with differing levels of air pollution for several years. A publication from this study reported that school absences in fourth graders for respiratory illnesses were positively associated with ambient ozone levels. An increase of 20 ppb ozone was associated with an 83% increase in illness-related absence rates[4].

The number of hospital admissions and emergency room visits for all respiratory causes (infections, respiratory failure, chronic bronchitis, etc.) including asthma shows a consistent increase as ambient ozone levels increase in a community. These excess hospital admissions and emergency room visits are observed when hourly ozone concentrations are as low as 60 to 100 ppb.

Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations are strongest during warmer months but overall persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants[5].

Multicity studies of short-term ozone exposures (days) and mortality have also examined regional differences. Evidence was provided that there were generally higher ozone-mortality risk estimates in northeastern U.S. cities, with the southwest and urban mid-west cities showing lower or no associations[6]. Another long-term study of a national cohort found that long-term exposures to ozone were associated with respiratory-related causes of mortality, but not cardiovascular-related causes, when PM2.5 exposure was also included in the analysis.

In the ongoing U.S. EPA review, it was concluded that there is adequate evidence for asthmatics to be a potentially at risk population[7]. Several population-based studies suggest that asthmatics are at risk from ambient ozone levels, as evidenced by changes in lung function, increased hospitalizations and emergency room visits.

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[3] U.S. EPA. (2006) Air Quality Criteria for Ozone and Related Photochemical Oxidants (2006 Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/004aF-cF

[4] Gilliland FD, Berhane K, Rappaport EB, Thomas DC, Avol E, Gauderman WJ, London SJ, Margolis HG, McConnell R, Islam KT, Peters JM. (2001). "The Effects of Ambient Air Pollution on School Absenteeism Due to Respiratory Illnesses." Epidemiology, 12(1):43-54.

[5] Bell ML, McDermott A, Zeger SL, Samet, JM, Dominici, F. (2004). "Ozone and Short-Term Mortality in 95 US Urban Communities, 1987-2000." JAMA 292:2372-2378.

[6] Bell, ML; Dominici, F. (2008). Effect modification by community characteristics on the short-term effects of ozone exposure and mortality in 98 US communities. Am J Epidemiol 167: 986-997.

[7] U.S. EPA. (2012) Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Third External Review Draft). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076C

Laboratory studies have also compared the degree of lung function change seen in age and gender-matched healthy individuals versus asthmatics and those with chronic obstructive pulmonary disease. In studies of individuals with chronic obstructive pulmonary decease, the degree of change evidenced did not differ significantly. That finding, however, may not accurately reflect the true impact of exposure on these respiration-compromised individuals. Since the respiration-compromised group may have lower lung function to begin with, the same total change may represent a substantially greater relative adverse effect overall. Other studies have found that subjects with asthma are more sensitive to the short-term effects of ozone in terms of lung function and inflammatory response.

Another publication from the Children's Health Study focused on children and outdoor exercise. In Southern California communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was found to be over three times higher than in children playing no sports[8]. These findings indicate that new cases of asthma in children may be associated with performance of heavy exercise in communities with high levels of ozone. While it has long been known that air pollution can exacerbate symptoms in individuals with preexisting respiratory disease, this is among the first studies that indicate ozone exposure may be causally linked to asthma onset.

The evidence linking these effects to air pollutants is derived from population-based observational and field studies (epidemiological) as well as controlled laboratory studies involving human subjects and animals. There have been an increasing number of studies focusing on the mechanisms (that is, on learning how specific organs, cell types, and biomarkers are involved in the human body's response to air pollution) and specific pollutants responsible for individual effects.

In addition, human and animal studies involving both short-term (few hours) and long-term (months to years) exposures indicate a wide range of effects induced or associated with ambient ozone exposure. These are summarized in Table 4-4.

Some lung function responses (volume and airway resistance changes) observed after a single exposure to ozone exhibit attenuation or a reduction in magnitude with repeated exposures. Although it has been argued that the observed shift in response is evidence of a probable adaptation phenomenon, it appears that while functional changes may exhibit attenuation, biochemical and cellular changes which may be associated with episodic and chronic exposure effects may not exhibit similar adaptation. That is, internal damage to the respiratory system may continue with repeated ozone exposures, even if externally observable effects (chest symptoms and reduced lung function) disappear. Additional argument against adaptation is that after several days or weeks without ozone exposures, the responsiveness in terms of lung function as well as symptoms returns.

In a laboratory, exposure of human volunteers to low levels of ozone causes reversible decrease in lung function as assessed by various measures such as respiratory volumes, airway resistance and reactivity, irritative cough and chest discomfort. Lung function changes have been observed with ozone exposure as low as 60 to 120 ppb for 6-8 hours under moderate exercising conditions. Similar lung volume changes have also been observed in adults and children under ambient

McConnell R, Berhane K, Gilliland F, London SJ, Islam T, Gauderman WJ, Avol E, Margolis HG, Peters JM. (2002). "Asthma in exercising children exposed to ozone: a cohort study." Lancet, 359:386-91.

exposure conditions (100 - 150 ppb 1-hour average). The responses reported are indicative of decreased breathing capacity and are reversible.

Table 4 -4
Adverse Health Effects of Ozone - Summary of Key Findings

OZONE CONCENTRATION AND EXPOSURE (ppm, hr)	HEALTH EFFECT
Ambient air containing 0.10 - 0.15 ppm daily 1-hr max over days to weeks;	Decreased breathing capacity in children, adolescents, and adults exposed to O3 outdoors.
< 0.06 ppm (Max 8-hour average)	Positive associations of ambient O3 with respiratory hospital admissions and Emergency Department (ED) visits in the U.S., Europe, and Canada with supporting evidence from single-city studies. Generally, these studies had mean 8-h max O3 concentrations less than 0.06 ppm.
< 0.069 ppm (Mean 8-hour average)	Positive associations between short-term exposure to ambient O3 and respiratory symptoms (e.g., cough, wheeze, and shortness of breath) in children with asthma. Generally, these studies had mean 8-hr max O3 concentrations less than 0.069 ppm.
≥0.12 ppm (1-3hr)	Decrements in lung function (reduced ability to take a deep breath), increased respiratory symptoms (cough, shortness of breath, pain upon deep inspiration), increased airway responsiveness and increased airway inflammation in exercising adults.
≥0.06 ppm (6.6hr)	Effects are similar in individuals with preexisting disease except for a greater increase in airway responsiveness for asthmatic and allergic subjects.
(chamber exposures)	Older subjects (>50 yrs old) have smaller and less reproducible changes in lung function.
	Attenuation of response with repeated exposure.
≥0.12 ppm with prolonged, repeated exposure (chamber exposures)	Changes in lung structure, function, elasticity, and biochemistry in laboratory animals that are indicative of airway irritation and inflammation with possible development of chronic lung disease.
	Increased susceptibility to bacterial respiratory infections in laboratory animals.

From: U.S. EPA. (2012) Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Third External Review Draft). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076C

The results of several studies where human volunteers were exposed to ozone for 6.6 hours at levels between 40 and 120 ppb were recently summarized[9].

In addition to controlled laboratory conditions, studies of individuals exercising outdoors, including children attending summer camp, have shown associations of reduced lung function with ozone exposure. There were wide ranges in responses among individuals. U.S. EPA's recent

[9] Brown JS, Bateson TF, McDonnell WF (2008). Effects of Exposure to 0.06 ppm Ozone on FEV1 in Humans: A Secondary Analysis of Existing Data. Environ Health Perspect 116:1023-1026.

review indicates reductions of <1 to 4% in lung function when standardized to an increase of 30 ppb for an 8-hour maximum[10].

Results of epidemiology studies support the relationship between ozone exposure and respiratory effects. Several, but not all, studies have found associations of short-term ozone levels and hospital admissions and emergency department admissions for respiratory-related conditions[11].

In laboratory studies, cellular and biochemical changes associated with respiratory tract inflammation have also been consistently found in the airway lining after low- level exposure to ozone. These changes include an increase in specific cell types and in the concentration of biochemical mediators of inflammation and injury such as Interleukin-1, Tumor Necrosis Factor α, and fibronectin. Indications of lung injury and inflammatory changes have been observed in healthy adults exposed to ozone in the range of 60 to 100 ppb for up to 6.6 hours with intermittent moderate exercise.

There may be interactions between ozone and other ambient pollutants. The susceptibility to ozone observed under ambient conditions could be modified due to the combination of pollutants that coexist in the atmosphere or ozone might sensitize these subgroups to the effects of other pollutants.

Some animal studies show results that indicate possible chronic effects including functional and structural changes of the lung. These changes indicate that repeated inflammation associated with ozone exposure over a lifetime may result in cumulative damage to respiratory tissue such that individuals later in life may experience a reduced quality of life in terms of respiratory function and activity level achievable. An autopsy study involving Los Angeles County residents, although conducted many years ago when pollutant levels were higher than currently measured, provided supportive evidence of lung tissue damage (structural changes) attributable to air pollution.

A study of birth outcomes in Southern California found an increased risk for birth defects in the aortic and pulmonary arteries associated with ozone exposure in the second month of pregnancy[12]. This was the first study linking ambient air pollutants to birth defects in humans. Studies conducted since mostly focusing on cardiac and oral cleft defects have found mixed results, with some showing associations, but others did not.

In summary, adverse effects associated with ozone exposures have been well documented. Although the specific mechanisms of actions are not fully identified, there is a strong likelihood that oxidation of key enzymes and proteins and inflammatory responses play important roles.

U.S. EPA staff has provided conclusions on the causality on ozone health effects for the health outcomes[13] evaluated (provided in Tables 4-5 and 4-6). To understand the meaning of the causal relationship between air pollution and health, Table 4-5 below shows the five descriptors used by U.S. EPA.

[10] U.S. EPA. (2012) Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Third External Review Draft). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076C.

[11] U.S. EPA (2012) Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards First External Review Draft EPA–452/P–12–002, August 2012

[12] Ritz B, Yu F, Fruin S. Chapa G, Shaw GM, Harris JA. (2002). "Ambient Air Pollution and Risk of Birth Defects in Southern California." Am J Epidemiol, 155(1):17-25

[13] U.S. EPA. (2012) Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Third External Review Draft). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076C

The proposed project's localized impacts are less than significant ~~short-term (maximum of 6 year delay)~~ and no long-term health effects are expected.

Table 4 -5
Weight of Evidence Descriptions for Causal Determination

DETERMINATION	WEIGHT OF EVIDENCE
Causal Relationship	Evidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures. That is, the pollutant has been shown to result in health effects in studies in which chance, bias, and confounding could be ruled out with reasonable confidence. For example: a) controlled human exposure studies that demonstrate consistent effects; or b) observational studies that cannot be explained by plausible alternatives or are supported by other lines of evidence (e.g., animal studies or mode of action information). Evidence includes replicated and consistent high-quality studies by multiple investigators. Evidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures. That is, the pollutant has been shown to result in effects in studies in which chance, bias, and confounding could be ruled out with reasonable confidence. Controlled exposure studies (laboratory or small- to medium-scale field studies) provide the strongest evidence for causality, but the scope of inference may be limited. Generally, determination is based on multiple studies conducted by multiple research groups, and evidence that is considered sufficient to infer a causal relationship is usually obtained from the joint consideration of many lines of evidence that reinforce each other.
Likely To Be A Causal Relationship	Evidence is sufficient to conclude that a causal relationship is likely to exist with relevant pollutant exposures, but important uncertainties remain. That is, the pollutant has been shown to result in health effects in studies in which chance and bias can be ruled out with reasonable confidence but potential issues remain. For example: a) observational studies show an association, but copollutant exposures are difficult to address and/or other lines of evidence (controlled human exposure, animal, or mode of action information) are limited or inconsistent; or b) animal toxicological evidence from multiple studies from different laboratories that demonstrate effects, but limited or no human data are available. Evidence generally includes replicated and high-quality studies by multiple investigators.
Suggestive Of A Causal Relationship	Evidence is suggestive of a causal relationship with relevant pollutant exposures, but is limited because chance, bias and confounding cannot be ruled out. For example, at least one high-quality epidemiologic study shows an association with a given health outcome but the results of other studies are inconsistent.
Inadequate To Infer A Causa Relationship	Evidence is inadequate to determine that a causal relationship exists with relevant pollutant exposures. The available studies are of insufficient quantity, quality, consistency or statistical power to permit a conclusion regarding the presence or absence of an effect.
Not Likely To Be A Causal Relationship	Evidence is suggestive of no causal relationship with relevant pollutant exposures. Several adequate studies, covering the full range of levels of exposure that human beings are known to encounter and considering susceptible populations, are mutually consistent in not showing an effect at any level of exposure.

Adapted from U.S. EPA. (2009) Integrated Science Assessment for Particulate Matter (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/139F

Table 4-6
Summary of Causal Determinations for Short-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Effects on Liver and Xenobiotic Metabolism	Inadequate to infer a causal relationship
Effects on Cutaneous and Ocular Tissues	Inadequate to infer a causal relationship
Mortality	Likely to be a causal relationship

POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

While all the environmental topics required to be analyzed under CEQA were previously reviewed in the 2007 Final EA to determine if the proposed project could create significant impacts, the screening analysis concluded that the following environmental areas would not be significantly adversely affected by the proposed project: aesthetics, 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/hazardous waste, and transportation/traffic.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines §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 Final SEA identified the topic of air quality and GHG during operation as the only environmental area potentially adversely affected by the proposed project.

Even though the proposed project could result in emission reductions foregone during operation that exceeds the applicable operational air quality significance threshold, they could for the following reasons not be expected to interfere with the air quality progress and attainment demonstration projected in the AQMP. Based on regional modeling analyses performed for the 2012 AQMP, implementing control measures contained in the 2012 AQMP, in addition to the air quality benefits of the existing rules, is anticipated to bring the district into attainment with all national and most state ambient air quality standards by the year 2023. Therefore, cumulative operational air quality impacts from the proposed project, previous amendments and all other AQMP control measures considered together, are not expected to be significant because implementation of all AQMP control measures is expected to result in net emission reductions and overall air quality improvement. This determination is consistent with the conclusion in the 2012 AQMP Final Program EIR that direct cumulative air quality impacts from all AQMP control measures are not expected to be significant (SCAQMD, 2012). For these reasons, the proposed project would not result in irreversible environmental changes or irretrievable commitment of resources.

POTENTIAL GROWTH-INDUCING IMPACTS

CEQA Guidelines §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 only one existing biogas facility.

CONSISTENCY

CEQA Guidelines §15125(d) requires an EIR to discuss any inconsistencies between a proposed project and any applicable general plans or regional plans. SCAG and the SCAQMD have developed, with input from representatives of local government, the industry community, public health agencies, the USEPA - Region IX and CARB, guidance on how to assess consistency within the existing general development planning process in the Basin. Pursuant to the development and adoption of its Regional Comprehensive Plan Guide (RCPG), SCAG has developed an Intergovernmental Review Procedures Handbook (June 1, 1995). The SCAQMD also adopted criteria for assessing consistency with regional plans and the AQMP in its CEQA Air Quality Handbook. The following sections address the consistency between the proposed project and relevant regional plans pursuant to the SCAG Handbook and SCAQMD Handbook.

Consistency with Regional Comprehensive Plan and Guide (RCPG) Policies

The RCPG provides the primary reference for SCAG's project review activity. The RCPG serves as a regional framework for decision making for the growth and change that is anticipated during the next 20 years and beyond. The Growth Management Chapter (GMC) of the RCPG contains population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review. It states that the overall goals for the region are to: 1) re-invigorate the region's economy; 2) avoid social and economic inequities and the geographical isolation of communities; and, 3) maintain the region's quality of life.

Consistency with Growth Management Chapter (GMC) to Improve the Regional Standard of Living

The Growth Management goals are to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, and strengthen the regional strategic goal to stimulate the regional economy. The proposed project in relation to the GMC would not interfere with the achievement of such goals, nor would it interfere with any powers exercised by local land use agencies. Further, the proposed project will not interfere with efforts to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.

Consistency with Growth Management Chapter (GMC) to Provide Social, Political and Cultural Equity

The Growth Management goals to develop urban forms that avoid economic and social polarization promotes the regional strategic goals of minimizing social and geographic disparities and of reaching equity among all segments of society. Consistent with the Growth Management goals, local jurisdictions, employers and service agencies should provide adequate training and retraining of workers, and prepare the labor force to meet the challenges of the regional economy. Growth Management goals also include encouraging employment development in job-poor localities through support of labor force retraining programs and other economic development measures. Local jurisdictions and other service providers are responsible to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection. Implementing the proposed project has no effect on and, therefore, is not expected to interfere with the goals of providing social, political and cultural equity.

Consistency with Growth Management Chapter (GMC) to Improve the Regional Quality of Life

The Growth Management goals also include attaining mobility and clean air goals and developing urban forms that enhance quality of life, accommodate a diversity of life styles, preserve open space and natural resources, are aesthetically pleasing, preserve the character of communities, and enhance the regional strategic goal of maintaining the regional quality of life. The RCPG encourages planned development in locations least likely to cause environmental impacts, as well as supports the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals. While encouraging the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites, the plan discourages development in areas with steep slopes, high fire, flood and seismic hazards, unless complying with special design requirements. Finally, the plan encourages mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that could reduce exposure to seismic hazards, minimize earthquake damage, and develop emergency response and recovery plans. The proposed project has no impact on any of these issues except air quality. However, since the project would not interfere with the AQMP, it will not be inconsistent with the goal of improving the regional quality of life. Therefore, in relation to the GMC, the proposed project is not expected to interfere, but rather help with attaining and maintaining the air quality portion of these goals.

Consistency with Regional Mobility Element (RMP) and Congestion Management Plan (CMP)

PAR 1110.2 is consistent with the RMP and CMP since no significant adverse impact to transportation/circulation will result from the ~~temporary delay of~~ NOx, VOC and CO emission reductions foregone within the District. Because affected facilities will not increase their handling capacities, there will not be an increase in material transport trips associated with the implementation of PAR 1110.2. Therefore, PAR 1110.2 is not expected to adversely affect circulation patterns or congestion management.

CHAPTER 5

ALTERNATIVES

INTRODUCTION

This Final SEA provides a discussion of alternatives to the proposed project as required by CEQA. A range of reasonable alternatives to the proposed project shall include measures that feasibly attain most of the project objectives 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 §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 an environmental assessment than is required for an EIR under CEQA.

PROJECT OBJECTIVES

As noted in Chapter 2, CEQA Guidelines §15124(b) requires the project description to include a statement of objectives sought by the proposed project, including the underlying purpose of the proposed project. Compatibility with project objectives is one criterion for selecting a range of reasonable project alternatives and provides a standard against which to measure project alternatives. The project objectives identified in the following bullet points have been developed: 1) in compliance with CEQA Guidelines §15124 (b); and, 2) to be consistent with policy objectives of the SCAQMD's desire to implement AQMP, yet allow feasible compliance dates. The project objectives are as follows:

- Provide relief for the facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, from the emissions requirements specified in Table III-B of Rule 1110.2, provided the facility has met specific criteria;
- Maintain the lower limits on NOx, VOC, and CO emissions from the combustion of gaseous and liquid biogas engines;
- Aside from temporary air quality impacts, avoid generating any new adverse environmental impacts.

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 §15126.6(c)). While the scope and goals of proposed projects may be relatively specific, a variety of options can be considered as alternatives to the proposed project. The following alternatives have been eliminated from further detailed consideration in the Final SEA for the following reasons: 1) they fail to meet the most basic project objectives, 2) they are infeasible as defined by CEQA (CEQA Guidelines §15364), or 3) they are unable to avoid significant impacts (CEQA Guidelines §15126.6(c)).

Trucking Gas Offsite

This potential alternative would require the affected facility needing the six years of additional time to truck their biogas offsite. However, trucking the gas offsite would be technically challenging and have safety issues. The biogas would need to be cleaned before use and be trucked to a facility that would be able to process the gas. There would be additional air quality impacts due to the truck emissions and processing of the gas. Also the facilities would lose the benefit of using their gas for electricity generation. While this potential alternative would reduce NOx, VOC and CO emissions from the combustion of gaseous and liquid fuels from their engines, thus generating an air quality benefit, this alternative has been eliminated from consideration because it does not meet the third basic project objective: to avoid any new adverse environmental impacts. Based on these reasons, this alternative will not be further considered.

Compress for Gas Sales and Pipeline

This potential alternative would require the affected facility needing the six years of additional time to compress their biogas for sale and send the biogas to a pipeline. There are several reasons on why this is infeasible: safety, legality, land availability, consistent gas, and proximity of a pipeline. Under this alternative, the gas would be sold to a local biogas provider rather than being used onsite with biogas engines. In addition, a gas processing plant (Gas Plant) would be required to meet the provider's specifications. A Gas Plant may be comprised of initial compression of field gas (i.e. compressor, scrubbers), dehydration (i.e. separators, scrubbers, condensers, stabilization units, heat exchangers, chillers, glycol separators and filters, glycol pumps, glycol regenerator/reboiler, compressors, other refrigeration equipment items, natural gas liquid vessel/tanks), potential CO_2 removal in an amine unit (gas and liquid separators, amine contactor, amine filter, amine vessel/tank, heat exchanger and reboiler, cooler, pumps, etc.), and flares and/or permitted microturbines to combust tail gas from the gas sales equipment. In addition to the Gas Plant, gas metering and odorizing equipment would be required by the local gas provider and the US DOT. Also, the facilities would lose the benefit of using their gas for electricity generation. While this potential alternative would reduce NOx, VOC and CO emissions from the combustion of gaseous and liquid fuels from their engines, thus generating an air quality benefit, this alternative has been eliminated from consideration because, as mentioned above, it is not technology feasible due to safety, legality, land availability, consistent gas, and proximity of a pipeline. Additionally, by operators using their biogas engines to generate their own electricity, they are part of the State's renewable energy portfolio. Lastly, this alternative does not meet the third basic project objective: to avoid any adverse environmental impacts. Based on these reasons, this alternative will not be further considered.

ALTERNATIVES SUMMARY

The proposed project and three alternatives to the proposed project are summarized in Table 5-1: Alternative A (No Project), Alternative B (Replace Flare) and Alternative C (New Micro Turbines). Pursuant to CEQA Guidelines §15126.6 (b), the purpose of an alternatives analysis is to reduce or avoid potentially significant adverse effects that a project may have on the environment. The environmental topic area identified in the July 2015 NOP/IS that may be adversely affected by the proposed project is air quality and greenhouse gases impacts. A comprehensive analysis of potential air quality impacts is included in Chapter 4 of this document. This chapter provides a comparison of the potential air quality impacts from each of the project alternatives relative to the proposed project, which are summarized in Table 5-2. That analysis concluded that only air quality impacts have the potential to be significant. Aside from air quality, no other significant adverse impacts were identified for the proposed project and the following analyzes the project alternatives. As indicated in the following discussions, the proposed project

is considered to provide the best balance between meeting the objectives of the project while minimizing potentially significant adverse environmental impacts.

Table 5-1
Summary of PAR 1110.2 and Project Alternatives

Project	Project Description
Alternative A (No Project)	The proposed project would not be adopted and the current universe of equipment at biogas facilities will continue to be subject to the NOx, VOC and CO emission limits according to the current compliance schedule in Rule 1110.2. If facilities cannot comply with the existing rule, operators may shut down their biogas engines and release their gas through their existing flares. The facilities would purchase more electricity.
Alternative B (Replace Flares)	Through additional rulemaking, biogas facilities not meeting the current Rule 1110.2 biogas emission limits would be required to process the biogas through new cleaner and efficient flares under a separate rule. The new flares' emissions would be lower than the NOx, CO, and VOC emissions of the proposed project. GHG emissions would increase from power plants needed to generate electricity that would otherwise be generated from the biogas engines and backup diesel engines. All other requirements and conditions in the proposed project would be applicable.
Alternative C (New Micro Turbines)	Through additional rule making, biogas facilities not meeting the current Rule 1110.2 biogas emission limits would be required to process the biogas through new micro turbines to handle their facilities' biogas under a separate rule. The new microturbines' emissions would be comparable to the NOx, CO, and VOC emissions of the proposed project. GHG emissions would increase from backup diesel engines. All other requirements and conditions in the proposed project would be applicable.

Table 5-2
Comparison of Environmental Impacts of the Alternatives

Category	Proposed Project	Alternative A: No Project	Alternative B: Replace Flares	Alternative C: New Micro Turbines
Air Quality Impacts: Construction	This proposed amendment does not have any construction impacts.	No construction impacts.	Minor construction impacts associated with replacing flares.	Minor construction impacts associated with installing new micro turbines.
Significant?	No	No	No	No
Air Quality Impacts: Operation	Approximately 0.07 tons of NOx, 0.01 tons/day of VOC, and 0.08 tons/day of CO peak daily emission reductions foregone from 2017 through 2022 ~~delayed~~; ~~emission reductions are not permanent- will be recaptured in compliance year 2022;~~ emissions foregone ~~from the temporary delay~~ would exceed the SCAQMD CEQA significance thresholds for operation.	Fewer emissions than proposed project due to no ~~delay in~~ emission reductions foregone; however, no co-benefit of electricity production because biogas engines would not be able to meet current limits and would likely shut down; there would be additional emissions from power plants and backup engines; thus, these emissions would still exceed the SCAQMD CEQA significance thresholds for operation.	Due to the new flares being more efficient in combustion than the biogas engines, there would be less NOx, VOC and CO emissions than the proposed project; however, there would be additional emissions from power plants and backup engines and these emissions would still exceed the SCAQMD CEQA significance thresholds for operation.	Due to the new microturbines being more efficient in combustion than the biogas engines, there would be slightly less NOx and CO emissions than the proposed project; however, there would be an increase in VOC emissions compared to the proposed project; there would be additional emissions from backup engines and these emissions would still exceed the SCAQMD CEQA significance thresholds for operation.
Significant?	Yes	Yes	Yes	Yes

Category	Proposed Project	Alternative A: No Project	Alternative B: Replace Flares	Alternative C: New Micro Turbines
Air Quality Impacts: GHG	None; since GHG emissions are based on fuel usage, the GHG emissions will remain the same no matter the type of combustion source.	Same as proposed project	GHG emissions would increase from power plants and back up diesel engines; however the emissions are less than the SCAQMD CEQA significance threshold for GHG.	GHG emissions would increase from back up diesel engines; however, the emissions are less than the SCAQMD CEQA significance threshold for GHG.
Significant?	No	No	No	No

DESCRIPTION OF PROJECT ALTERNATIVES

The project alternatives described in the following subsections 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" and "potentially feasible" alternatives: that is, alternatives that can actually be implemented. When considering approval of the proposed project, the SCAQMD's Governing Board may choose all of or portions of any of the alternatives analyzed, as well as variations on the alternatives, since the comparative merits of the project alternatives have been analyzed and circulated for public review and comment along with the analysis of the proposed project. The main components of the proposed project and each project alternative are summarized in Table 5-3. A complete description of the proposed project can be found in Chapter 2 (Project Description) and any element of the proposed project not listed will remain the same for Alternatives B and C.

Table 5-3
Comparison of Key Components of the Proposed Project to the Alternatives

Proposed Project (Key Components)	**Alternative A:** No Project	**Alternative B:** Replace Flares	**Alternative C:** New Micro Turbines
~~Delays~~ Relief from compliance with lower NOx, VOC, and CO emission limits, provided the facility meets specific criteria, including commitment from the operator to permanently remove all equipment subject to Rule 1110.2 by October 1, 2022	No change in current NOx, VOC, and CO emission reductions pursuant to Rule 1110.2; however, no co-benefit of electricity production because biogas engines would not be able to meet current limits and would likely shut down; there would also be additional emissions from power plants and backup engines	Additional delay in NOx, VOC, and CO emissions reductions would occur compared to the proposed project due to the time challenges in rulemaking, engineering, permitting, and installation; there would also be additional emissions from power plants and backup engines	Additional delay in NOx, VOC, and CO emissions reductions would occur compared to the proposed project due to the time challenges in rulemaking, engineering, permitting, and installation

Alternative A - No Project

CEQA Guidelines §15126.6 requires evaluation of a no project alternative to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The No Project Alternative assumes that the proposed project or Alternatives B or C would not be adopted.

Alternative A or 'no project' means that the current affected equipment will continue to be subject to the NOx, CO, and VOC emission limits according to the current compliance schedule in Rule 1110.2. By not ~~delaying the compliance schedule for biogas engines~~ providing the relief in PAR 1110.2, one facility will continue to experience compliance challenges. The no project alternative is not economically feasible because the affected facility has entered into a PPA and is scheduled to shut down in 2022. Thus, under Alternative A, the owner/operator of the equipment not able to meet the applicable NOx, VOC, and CO emission limits by the applicable compliance date will need to shut down the equipment and use their existing flares to flare their biogas or apply for a variance. By flaring the biogas, the operators will lose the benefit of harnessing the available energy. There may be lower criteria pollutant emissions under this scenario, however, there would be additional GHG emissions from power plants to generate electricity that would otherwise be generated from the biogas engines and backup diesel engines (See the 2012 Addendum to the 2007 Final EA for details). The alternative emissions comparisons in Table 5-4 were calculated using emissions from the one known facility in the SCAQMD that would be affected by the proposed project.

Table 5-4
Comparison of Emissions with Alternative A

Alternative:	NOx (tpd)	VOC (tpd)	CO (tpd)	CO2e (MT/yr)
Existing Setting	0.1	0.03	0.5	31,132
Full Compliance with Rule Limits	0.03	0.02	0.42	31,132
Alternative A (on-site)*	0.05	0.03	0.48	31,163
Alternative A (on-site and off-site)*	0.05	0.04	0.69	31,175

*On-site emissions include backup diesel engines, and off-site emissions include electricity generation.

Alternative B – Replace Flares

Alternative B is a potential alternative that would require the affected facility to upgrade their existing flares to new flares through separate rulemaking. The facility would be required to process the biogas through cleaner flares. As discussed in Chapter 4, GHG impacts would be the same as the fuel usage does not change; however, there would be an increase in GHG from the power plants and backup diesel engines. Under Alternative B, the amount of GHG emissions would increase from electricity generation (power plants and backup diesel engines), but direct VOC and CO emissions will decrease (see Table 5-5) as compared to the proposed project. There would also be additional minor construction emissions compared to the proposed project. Furthermore, there would be additional delays due to the time it would take to develop a new rule, engineer, permit, and install the new flares. Even though Alternative B does not achieve the goals of the proposed project, it is the environmentally superior alternative in accordance with CEQA Guidelines §15126.6(e)(2) because it will result in the lowest level of NOx, VOC, and CO emissions thus, improving the air quality in the District. The alternative emissions comparisons were calculated using emissions from the one known facility in the SCAQMD that would be affected by the proposed project. See Appendix B of this Final SEA for calculations.

Table 5-5
Comparison of Emissions with Alternative B

Alternative:	NOx (tpd)	VOC (tpd)	CO (tpd)	CO2e (MT/yr)
Existing Setting	0.10	0.03	0.50	31,132
Full Compliance with Rule Limits	0.03	0.02	0.42	31,132
Alternative B (on-site)*	0.04	0.01	0.06	31,163
Alternative B (on-site and off-site)*	0.04	0.03	0.28	31,175

*On-site emissions include backup diesel engines, and off-site emissions include electricity generation.

Alternative C – New Micro Turbines

Alternative C is a potential alternative that would require the affected facility to replace their existing engines with new microturbines through separate rulemaking. The facility would be required to process the biogas through the newly installed microturbines. Additional minor construction emissions would occur with Alternative C, because there are no construction activities associated with the proposed project. As discussed in Chapter 4, GHG impacts would be the same

as the fuel usage does not change; however, there would be an increase in GHG emissions from backup diesel engines. Under Alternative C, the amount of NOx emissions would decrease while the VOC, CO and GHG emissions will increase relative to the proposed project (see Table 5-6). The alternative emissions comparisons were calculated using emissions from the one known facility in the SCAQMD that would be affected by the proposed project. See Appendix B of this Final SEA for calculations.

Table 5-6
Comparison of Emissions for Proposed Project and Alternative C

Alternative:	NOx (tpd)	VOC (tpd)	CO (tpd)	CO2e (MT/yr)
Existing Setting	0.10	0.03	0.50	31,132
Proposed Project Future Emissions	0.10	0.03	0.50	31,132
Alternative C (on-site)	0.05	0.07	0.67	31,163

COMPARISON OF ALTERNATIVES

The Environmental Checklist (see Chapter 2 of the July 2015 Initial Study) identified only air quality and greenhouse gas emissions during operations as the environmental area that could be significantly adversely affected by the proposed project. The following section describes the potential adverse operational air quality impacts that may be generated by each project alternative compared to the proposed project. A summary of the adverse operational air quality impacts for the proposed project and each project alternative are also provided in Table 5-2. No other environmental topics other than operational air quality were determined to be potentially significantly adversely affected by implementing any project alternative.

Alternative A - No Project

Unlike the proposed project, it is not anticipated that Alternative A would generate significant adverse impacts during operation because the owner/operator of affected equipment would be expected to comply with the applicable NOx, VOC, and CO limits in accordance with the current compliance schedule for existing (in-use) equipment in Rule 1110.2. Instead, the owner/operator of the affected equipment would continue existing operations in compliance with the current NOx, VOC, and CO limits and non-compliant equipment would need to be shutdown. By not adopting the proposed project, current operations mean that the owner/operator of affected equipment would not be able to ~~delay~~ get relief from the compliance schedule. Thus, under Alternative A, the owner/operator of equipment not able to meet the applicable NOx, VOC, and CO emission limits by the applicable compliance date will need to shut down the equipment and use their existing flares to flare their biogas or apply for a variance to comply. By flaring the biogas, the operator will lose the benefit of harnessing the available energy. Additionally, there would be GHG emissions from power plants needed to generate electricity that would otherwise be generated from the biogas engines and backup diesel engines. (See 2012 Addendum to the 2007 Final EA for details)

Alternative A will achieve the emission reduction goals of Rule 1110.2; however, it does not achieve all of the goals of the proposed project because it does not provide relief for one biogas facility that has met specific criteria and who are not able to meet the current compliance deadlines due to an already existing PPA.

Alternative B – Replace Flares

Alternative B proposes the same emission limits as the proposed project, but instead of using their biogas engines, the facility would need to replace their existing flares with new efficient flares. This would be required under a separate rule making. The flares' NOx, CO, and VOC emissions would be lower than the proposed project. If Alternative B were implemented, GHG emissions will increase from electricity generation (power plants and backup diesel engines), but less NOx, VOC and CO emissions would be emitted when compared to the proposed project (see Table 5-4 for comparison). However, the increase in GHG emissions is less than the SCAQMD CEQA significance threshold for GHG.

Alternative C – New Micro Turbines

Alternative C proposes the same emission limits as the proposed project. Instead of using biogas engines, the facility would need to install new micro turbines to meet the emissions limits. This would require a separate rule making. If Alternative C were implemented, potentially less NOx and CO emissions would be emitted when compared to the proposed project, but there would be an increase in VOC and GHG emissions (see Table 5-6 for comparison). However, the increase in GHG emissions is less than the SCAQMD CEQA significance threshold for GHG. There also would be potential issues with noise, aesthetics, and availability of land for operators.

LOWEST TOXIC AND ENVIRONMENTALLY SUPERIOR ALTERNATIVES

In accordance with SCAQMD's policy document Environmental Justice Program Enhancements for FY 2002-03, Enhancement II-1 recommends that all SCAQMD CEQA assessments include a feasible project alternative with the lowest air toxics emissions. In other words, for any major equipment or process type under the scope of the proposed project that creates a significant environmental impact, at least one alternative, where feasible, shall be considered from a "least harmful" perspective with regard to toxic air emissions.

Implementing Alternative B has the lowest impacts in emissions and the best corresponding health benefits when compared to the proposed project, Alternative A or Alternative C. Thus, Alternative B is considered to be the environmentally superior alternative. However, Alternative B would not fulfill one of the three objectives of the proposed project as listed earlier in this chapter. Alternative B would not provide relief for the affected biogas facility ~~facilities~~ from Rule 1110.2 because the operator of the biogas engines (MM PRIMA DESHECHA ENERGY, LLC) does not have the authority to replace the existing flares at the landfill, and it would eliminate using the landfill gas for beneficial use (electricity generation). ~~provided the facility has met specific criteria, including a commitment from the operator to permanently remove all equipment subject to Rule 1110.2 by October 1, 2022.~~ Therefore, the proposed project is the most superior.

CONCLUSION

By not adopting the proposed project, Alternative A would not ~~delay~~ forego the operational subject emission reductions and will achieve the same emission reductions currently required under Rule 1110.2. However, Alternative A would not achieve one of the project objectives for the proposed project because Alternative A will not provide relief for biogas facilities from Rule 1110.2 provided the facility has met specific criteria, including a commitment from the operator to permanently remove all equipment subject to Rule 1110.2 by October 1, 2022.

If Alternative B were implemented, the energy benefit from harnessing the biogas would be lost. Although the NOx, VOC, and CO emissions would be reduced, more GHG emissions would be

emitted when compared to the proposed project. Alternative B would not meet all of the project's objectives.

If Alternative C were implemented, there would be an energy benefit and there would be less NOx and CO emissions as compared to the proposed project. However, there would be an increase in VOC and GHG emissions. There might also be potential noise and aesthetics impacts as compared to the proposed project. Alternative C would not meet all of the project's objectives.

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 adverse environmental impacts to air quality.

APPENDICES

APPENDIX A

PROPOSED AMENDED RULE 1110.2

In order to save space and avoid repetition, please refer to the latest version of Proposed Amended Rule 1110.2 located in the June 3, 2016 Governing Board Package. The version of Proposed Amended Rule 1110.2 that was circulated with the Draft SEA released on March 29, 2016 for a 45-day public review and comment period ending May 13, 2016 was "PAR 1110.2 March 25, 2016".

Original hard copies of the Draft SEA, which include the draft version of the proposed rule listed above, can be obtained through the SCAQMD Public Information Center at the Diamond Bar headquarters or by calling (909) 396-2039.

APPENDIX B

ASSUMPTIONS AND CALCULATIONS

Biogas
Fuels

CO2 EF	0.0750332	lb/scf	CH4 EF	4.62E-06	lb/scf	N2O EF	9.10514E-06	lb/scf
	75,033.20	lb/MMscf		4.620913	lb/MMscf		9.105139002	lb/MMscf
CO2	180,945.13	lb/day	CH4	11.14	lb/day	N2O	21.96	lb/day
	29,965.96	MT/yr		1.85	MT/yr		3.64	MT/yr

Other Biomass Gases

CO2 Factor	CH4 Factor	N20 Factor
kg per scf	g per scf	g per scf
0.034106	0.002096	0.00413

http://www.epa.gov/climateleadership/documents/emission-factors.pdf

Flares Operational Emissions

CEB (flare) Max Gas Capacity	39,460,000	BTU/hr
Avg of Landfill & Digester HHV[1]	738	BTU/scf

[1.] Source C65 MT

Landfill and Digester Fuel Usage	2.41	MMscf/day

Project Operating Conditions

Total # of CEBs (flares)	2	
Fuel Usage Per CEB	1.3	MMscf/day
	39.460	MMBtu/hr

Project: CEBs Criteria Pollutant Emissions

Pollutant	Emission Factors[1]		Emissions Per CEB[2]		Emissions for All CEBs		
			(lbs/day)	(lbs/yr)	(lbs/day)	(lbs/yr)	(tpd)
VOC	0.0042	lb/MMBtu	4.0	1,452	7.5	2,728	0.00
NO_x	0.018	lb/MMBtu	17.0	6,222	32.0	11,693	0.02
CO	0.0074	lb/MMBtu	7.0	2,558	13.2	4,807	0.01

[1.] VOC, NO_x and CO emissions factors were obtained from manufacturer specifications. The PM emission factor is from AP-42 Table 13.5-1, note C (Industrial flares).

[2.] Emissions are calculated using 737 Btu/scf as the heating value

Project: CEBs GHG Emissions

Pollutant	Emission Factors[1] (lb/MMscf)	Emissions Per CEB (MT/yr)	Total Emissions for All CEBs (MT/yr)	Global Warming Potential[2]	CO_2e Emissions Per CEB (MT/yr)	CO_2e Emissions for All CEBs (MT/yr)
CH_4	4.6	0.98	1.85	21	20.62	38.8
N_2O	9.11	1.93	3.64	310	599.85	1,127.3
CO_2	75,033	15,946	29,966	1	15,946	29,966
				Total CO_2e Emissions:	16,566	31,132

[1.] EPA's Emissions Factors for GHG Inventories 2011

[2.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Microturbine Emissions

MT Heat Input Capacity	872,000	BTU/hr
Landfill & Digester HHV	738	BTU/scf
Landfill and Digester Gas Fuel Usage	2	MMscf/day
	2411534	scf/day

Cumulatives: Addition of Microturbines

Total # of Microturbines	85	
Rating of each Microturbine	65	kW
Fuel Usage per Microturbine	28,358	scf/day
	0.028	

Cumulatives: Microturbines Criteria Pollutant Emissions

Pollutant	Emission Factors		Emissions Microturbines (lbs/day)	Emissions Microturbines (lbs/yr)	(tpd)
VOC	1.0 lb/MW-hr		132.7	48,422	0.07
NO_x	0.5 lb/MW-hr		66.3	24,211	0.03
CO	6.0 lb/MW-hr		796	290,530	0.40

1. VOC, NO_x and CO emission factors are from the CARB Certification for Capstone C65 Microturbines (Executive Order DG-030-A).

Cumulatives: Microturbines GHG Emissions

Pollutant	Emission Factors[1] (lbs/MMscf)	Emissions (MT/yr)	All MT Emisions	Global Warming Potentials[2]	CO_2e Emissions (MT/yr)
CH_4	4.6	0.022	1.845	21	38.8
N_2O	9.1	0.043	3.636	310	1,127.3
CO_2	75,033	352	29,965.959	1	29,966.0
				Total CO_2e Emissions:	**31,132**

1. Emission factors for GHG Inventories, EPA

2. Global warming potentials are from Table 1 of SCAQMD Rule 2700.