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

SUBJECT: **NOTICE OF COMPLETION OF A DRAFT SUBSEQUENT ENVIRONMENTAL ASSESSMENT AND OPPORTUNITY FOR PUBLIC COMMENT**

PROJECT TITLE: **PROPOSED AMENDED RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID-FUELED ENGINES, AND PROPOSED AMENDED RULE 1100 – IMPLEMENTATION SCHEDULE FOR NOX FACILITIES**

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (South Coast AQMD) is the Lead Agency and has prepared a Draft Subsequent Environmental Assessment (SEA) to analyze environmental impacts from the project identified above pursuant to its certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l), and South Coast AQMD Rule 110). The Draft SEA includes a project description and analysis of potential adverse environmental impacts that could be generated from the proposed project. The purpose of this letter, the Notice of Completion (NOC), and the Draft SEA, is to allow public agencies and the public the opportunity to review and comment on the environmental analysis in the Draft SEA.

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

Comments focusing on your area of expertise, your agency's area of jurisdiction, if applicable, or issues relative to the environmental analysis for the proposed project will be accepted during a 46-day public review and comment period beginning Friday, July 26, 2019 and ending at 5:00 p.m. on Tuesday, September 10, 2019. **Please send any comments relative to the CEQA analysis in the Draft SEA to Ms. Tracy Tang (c/o CEQA) at the address shown above.** Comments can also be sent via facsimile to (909) 396-3982 or email to ttang@aqmd.gov. Please include the name and phone number of the contact person for your organization, if any. Questions regarding the proposed amended rules should be directed to Mr. Rodolfo Chacon at (909) 396-2726 or by email to rchacon@aqmd.gov.

The following meetings for the proposed project will be held at South Coast AQMD Headquarters: 1) Stationary Source Committee on July 26, 2019 at 10:30 a.m. in Conference Room CC8; 2) Public Workshop/CEQA Scoping on July 31, 2019 at 1:00 p.m. in the Auditorium; and 3) Public Hearing on October 4, 2019 at 9:00 a.m. in the Auditorium. (Note: Public meeting dates are subject to change.)

Date: July 25, 2019 **Signature:** Barbara Radlein

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

Reference: California Code of Regulations, Title 14, Sections 15085, 15087, 15105, 15162, 15251, 15252, and 15372

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

NOTICE OF COMPLETION OF A DRAFT SUBSEQUENT ENVIRONMENTAL ASSESSMENT (SEA) AND OPPORTUNITY FOR PUBLIC COMMENT

Project Title: Proposed Amended Rule 1110.2 – Emissions From Gaseous- and Liquid-Fueled Engines, and Proposed Amended Rule 1100 – Implementation Schedule For NOx Facilities

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

Description of Nature, Purpose, and Beneficiaries of Project: PAR 1110.2 applies to stationary and portable engines, rated greater than 50 brake horsepower, and proposes to: 1) include internal combustion engines operated at current and former RECLAIM facilities which were not previously subject to Rule 1110.2 and require them to comply with Best Available Retrofit Control Technology; 2) establish ammonia slip limits and require ammonia emissions monitoring; and 3) exempt non-emergency engines operated at remote two-way radio transmission towers. PAR 1100 proposes to require: 1) two- and four-stroke lean-burn compressor gas engines to comply with the NOx emission limits in PAR 1110.2 within 24 months after a permit to construct is issued, or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021; and 2) all other qualifying engines to meet the NOx emission limits by December 31, 2023. The proposed project is estimated to reduce NOx emissions by 0.29 ton per day. The Draft SEA identifies potentially significant adverse hazards and hazardous materials impacts. Some sites affected by the proposed project may be identified on lists compiled by the California Department of Toxic Substances Control per Government Code §65962.5.

Lead Agency: South Coast AQMD **Division:** Planning, Rule Development and Area Sources

Draft SEA and all supporting documentation are available at:	**or by calling:**	**Draft SEA can also be obtained by accessing South Coast AQMD's website at:**
South Coast AQMD Headquarters 21865 Copley Drive Diamond Bar, CA 91765	(909) 396-2039 **or by emailing:** PICrequests@aqmd.gov	http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects

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

☑ Los Angeles Times (July 26, 2019) ☑ South Coast AQMD Mailing List & Interested Parties
☑ South Coast AQMD Website ☑ South Coast AQMD Public Information Center

Draft SEA Review Period (46 days): July 26, 2019 – September 10, 2019

Scheduled Public Meeting Dates (subject to change):
The following meetings for the proposed project will be held at South Coast AQMD Headquarters:
Stationary Source Committee: July 26, 2019, 10:30 am; Conference Room CC8
Public Workshop/CEQA Scoping: July 31, 2019, 1:00 pm; Auditorium
South Coast AQMD Governing Board Hearing: October 4, 2019, 9:00 a.m.; Auditorium

The proposed project may have statewide, regional, or areawide significance; therefore, a CEQA scoping meeting is required (pursuant to Public Resources Code Section 21083.9 (a)(2) and CEQA Guidelines Section 15162(d)) and will be held at the South Coast AQMD's Headquarters in conjunction with the Public Workshop on July 31, 2019.

Send CEQA Comments to:	**Phone:**	**Email:**	**Fax:**
Ms. Tracy Tang	(909) 396-2484	ttang@aqmd.gov	(909) 396-3982
Direct Questions on PARs 1110.2 and 1100 to:	**Phone:**	**Email:**	**Fax:**
Mr. Rudy Chacon	(909) 396-2726	rchacon@aqmd.gov	(909) 396-3324

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Subsequent Environmental Assessment for Proposed Amended Rule 1110.2 - Emissions from Gaseous-and Liquid-Fueled Engines and Proposed Amended Rule 1100 – Implementation Schedule for NOx Facilities

July 2019

South Coast AQMD No. 07252019TT
State Clearinghouse No. 2016071006

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CHAPTER 1

EXECUTIVE SUMMARY

INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (South Coast AQMD) in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin. In 1977, amendments to the federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that fail to meet all federal ambient air quality standards (CAA Section 172), and similar requirements exist in state law (Health and Safety Code Section 40462). The federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO2), and particulate matter with an aerodynamic diameter of less than 10 microns (PM10). In 1997, the United States Environmental Protection Agency (U.S. EPA) promulgated ambient air quality standards for particulate matter with an aerodynamic diameter less than 2.5 microns (PM2.5). The U.S. EPA is required to periodically update the national ambient air quality standards (NAAQS).

In addition, the California Clean Air Act (CCAA), adopted in 1988, requires the South Coast AQMD to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO2), and NO2 by the earliest practicable date. (Health and Safety Code Section 40910.) The CCAA also requires a three-year plan review, and, if necessary, an update to the SIP. The CCAA requires air districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures pursuant to Health and Safety Code Sections 40913, 40914, and 40920.5. The term "feasible" is defined in the California Environmental Quality Act (CEQA) Guidelines[2] Section 15364, as a measure "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

By statute, the South Coast AQMD is required to adopt an air quality management plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the areas under the jurisdiction of the South Coast AQMD[3]. Furthermore, the South Coast AQMD must adopt rules and regulations that carry out the AQMP[4]. The AQMP is a regional blueprint for how the South Coast AQMD will achieve air quality standards and healthful air and the 2016 AQMP[5] contains multiple goals promoting reductions of criteria air pollutants, greenhouse gases (GHGs), and toxic air contaminants (TACs). In particular, the 2016 AQMP states that both oxides of nitrogen (NOx) and volatile organic compounds (VOC) emissions need to be addressed, with the emphasis that NOx emission reductions are more effective to reduce the formation of ozone and PM2.5. Ozone is a criteria pollutant shown to adversely affect human health and is formed when VOCs react with NOx in the atmosphere. NOx is a precursor to the formation of ozone and PM2.5, and NOx emission reductions are necessary to achieve the ozone standard attainment. NOx emission reductions also contribute to attainment of PM2.5 standards.

In October 1993, the South Coast AQMD Governing Board adopted Regulation XX – Regional Clean Air Incentives Market (RECLAIM) to reduce NOx and oxides of sulfur (SOx) emissions

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1 The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch. 324 (codified at Health and Safety Code Section 40400-40540).
2 The CEQA Guidelines are codified at Title 14 California Code of Regulations Section 15000 *et seq.*
3 Health and Safety Code Section 40460(a).
4 Health and Safety Code Section 40440(a).
5 South Coast AQMD, Final 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp

from high emitting facilities. The RECLAIM program was designed to take a market-based approach to achieve emission reductions, as an aggregate. The RECLAIM program was created to be equivalent to achieving emission reductions under a command-and-control approach, but by providing facilities with the flexibility to seek the most cost-effective solution to reduce their emissions. The market-based approach used in RECLAIM was based on using a supply-and-demand concept, where the cost to control emissions and reduce a facility's emissions would eventually become smaller than the diminishing supply of NOx RECLAIM trading credits (RTCs). However, analysis of the RECLAIM program over the long term has shown that the ability to achieve actual NOx emission reductions has diminished, due to a large amount of RTCs resulting from shutdowns being re-introduced into the market prior to amendments to Rule 2002 in October 2016 to address this issue.

In the 2016 AQMP, Control Measure CMB-05 - Further NOx Reductions from RECLAIM Assessment, committed to additional NOx emission reductions of five tons per day to occur by 2025. Also, the South Coast AQMD Governing Board directed staff to implement an orderly sunset of the RECLAIM program to achieve the additional five tons per day. Thus, CMB-05 committed to a process of transitioning NOx RECLAIM facilities to a command-and-control regulatory structure and ensure that the applicable equipment will meet Best Available Retrofit Control Technology (BARCT) level equivalency as soon as practicable.

On July 26, 2017, California State Assembly Bill (AB) 617 was approved by the Governor, which addresses community monitoring and non-vehicular air pollution (criteria pollutants and toxic air contaminants). AB 398, a companion to AB 617, was also approved, and extends California's cap-and-trade program for reducing greenhouse gas (GHG) emissions from stationary sources. AB 617 also contains an expedited schedule for implementing BARCT for cap-and-trade facilities. Industrial source RECLAIM facilities that are in the cap-and-trade program are subject to the requirements of AB 617. Under AB 617, Districts are required to develop by January 1, 2019, an expedited schedule for the implementation of BARCT no later than December 31, 2023, with the highest priority given to older, higher-polluting units that will need retrofit controls installed.

As a result of control measure CMB-05 from the 2016 AQMP as well as ABs 617 and 398, South Coast AQMD staff has been directed by the Governing Board to begin the process of transitioning the current regulatory structure for NOx RECLAIM facility emissions to an equipment-based command-and-control regulatory structure per South Coast AQMD Regulation XI – Source Specific Standards. Thus, South Coast AQMD staff conducted a programmatic analysis of the RECLAIM equipment at each facility to determine if there are appropriate and up-to-date BARCT NOx limits within existing South Coast AQMD command-and-control rules for all RECLAIM equipment. This analysis concluded that command-and-control rules would need to be adopted and/or amended to reflect current BARCT and provide implementation timeframes for achieving BARCT. Consequently, South Coast AQMD staff determined that RECLAIM facilities should not exit unless their NOx emitting equipment is subject to an adopted future BARCT rule.

As such, South Coast AQMD staff is proposing amendments to Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines, to facilitate the transition of affected equipment subject to the NOx RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05. Proposed Amended Rule (PAR) 1110.2 applies to all stationary and portable gaseous- and liquid-fueled engines with a rating greater than 50 brake horsepower (bhp) operated at RECLAIM and non-RECLAIM facilities. PAR 1110.2 is proposing to: 1) include internal combustion engines operated at current and former RECLAIM facilities which were not previously subject to Rule 1110.2 and require them to comply with BARCT ; 2) establish ammonia slip limits and require ammonia emissions monitoring;; 3) exempt non-emergency engines operated at remote two-way radio transmission towers. Additionally, staff is proposing to add definitions for additional clarity, add language to help facilitate the transition from RECLAIM, and revise exemptions to remove provisions that are obsolete. Implementation of the proposed project is estimated to reduce NOx emissions by 0.29 ton per day, and is expected to be achieved by retrofitting existing internal combustion engines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/systems, or by repowering or replacing existing internal combustion engines.

South Coast AQMD staff is also proposing amendments to Rule 1100 – Implementation Schedule for NOx Facilities, to require: 1) two- and four-stroke lean-burn compressor gas engines to comply with the NOx emission limits in PAR 1110.2 within 24 months after a permit to construct is issued, or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021; and 2) all other qualifying engines to meet the NOx emission limits by December 31, 2023.. Staff will also add definitions to PAR 1100 for clarity.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

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

Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written documents in lieu of a negative declaration or environmental impact report once the secretary of the resources agency has certified the regulatory program. The South Coast AQMD's regulatory program was certified by the secretary of resources agency on March 1, 1989 [CEQA Guidelines Section 15251(l)]. In addition, the South Coast AQMD adopted Rule 110 – Rule Adoption Procedures to Assure Protection and Enhancement of the Environment, which implements the South Coast AQMD's certified regulatory program. Under the certified regulatory program, the South Coast AQMD typically prepares an Environmental Assessment (EA) to evaluate the environmental impacts for rule projects proposed for adoption or amendment.

The proposed amendments to Rule 1110.2 and Rule 1100 are considered a "project" as defined by CEQA. PAR 1110.2 will transition affected stationary and portable internal combustion engines at NOx RECLAIM facilities to a command-and-control regulatory structure. NOx RECLAIM facilities with equipment subject to PAR 1110.2 will be required to meet the NOx emission limits as specified in PAR 1110.2, unless those facilities qualify for an exemption. The decision to transition from NOx RECLAIM into a source-specific command-and-control regulatory structure was approved by the South Coast AQMD Governing Board as a control measure CMB-05 in the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the Final Program Environmental Impact Report (Program EIR) certified in March 2017[6].

[6] South Coast AQMD, Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, March 2017. http://www.aqmd.gov/home/research/documents-reports/lead-agency-SCAQMD-projects/SCAQMD-projects---year-2017

The March 2017 Final Program EIR for the 2016 AQMP determined that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts in seven topic areas – air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation. More specifically, the March 2017 Final Program EIR evaluated the impacts from installation and operation of additional control equipment and selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) equipment potentially resulting in construction emissions, increased electricity demand, hazards from additional ammonia transport and use, increase in water use and wastewater discharge, changes in noise volume, generation of solid waste from construction and disposal of old equipment, and catalysts replacements, as well as changes in traffic patterns and volume. For the entire 2016 AQMP, the analysis in the March 2017 Final Program EIR concluded that significant and unavoidable adverse environmental impacts were expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction-related air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to (a) increased flammability of solvents; (b) storage, accidental release, and transportation of ammonia, (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. Since significant adverse environmental impacts were identified, mitigation measures were identified and applied. However, the March 2017 Final Program EIR concluded that the 2016 AQMP would have significant and unavoidable adverse environmental impacts even after mitigation measures were identified and applied. As such, mitigation measures were made a condition of project approval and a Mitigation Monitoring and Reporting Plan was adopted. Findings were made and a Statement of Overriding Considerations was prepared and adopted.

BARCT is statutorily required in California Health and Safety Code section 40406 to be based on "environmental, energy, and economic impacts." A BARCT analysis was conducted and completed as part of the rule development process for PAR 1110.2[7]. Based on the BARCT analysis, the current limit of 11 parts per million, by volume (ppmv) NOx of PAR 1110.2 is BARCT. PAR 1110.2 is proposing to: 1) include internal combustion engines operated at current and former RECLAIM facilities which were not previously subject to Rule 1110.2 and require them to comply with BARCT; 2) establish ammonia slip limits and require ammonia emissions monitoring; 3) exempt non-emergency engines operated at remote two-way radio transmission towers. Additionally, staff is proposing to add definitions for additional clarity, add language to help facilitate the transition from RECLAIM, and revise exemptions to remove provisions that are obsolete. PAR 1110.2 is estimated to reduce NOx emissions by 0.29 ton per day after implementation of BARCT limits and will provide an overall environmental benefit to air quality. While reducing emissions of NOx will create an environmental benefit, activities that facility operators may undertake to comply with PAR 1110.2 may also create secondary adverse environmental impacts in the topic area of hazards and hazardous materials.

In addition, amendments are proposed to Rule 1100 that would establish the compliance schedule qualifying stationary engines. PAR 1100 proposes to require: 1) two- and four-stroke lean-burn

[7] South Coast AQMD's rule development webpage for PAR 1110.2 contains all of the documentation relied upon for the BARCT analysis and can be found here: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules#1110.2

compressor gas engines to comply with the NOx emission limits in PAR 1110.2 within 24 months after a permit to construct is issued, or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021; and 2) all other qualifying engines to meet the NOx emission limits by December 31, 2023. However, PAR 1100 contains administrative changes that would not require any physical modifications to occur at affected facilities; thus, no environmental impacts are expected to occur.

South Coast AQMD staff has determined that the proposed project contains new information of substantial importance which was not known and could not have been known at the time the Final Program EIR was certified for the March 2017 adoption of the 2016 AQMP (referred to herein as the March 2017 Final Program EIR).

However, the proposed project is expected to have: 1) significant effects that were not discussed in the March 2017 Final Program EIR (CEQA Guidelines Section 15162(a)(3)(A)); and 2) significant effects that were previously examined that will be substantially more severe than what was discussed in the March 2017 Final Program EIR (CEQA Guidelines Section 15162(a)(3)(B)).Thus, analysis of the proposed project indicates that the type of CEQA document appropriate for the proposed project is a Subsequent Environmental Assessment (SEA), in lieu of an EA, which tiers off of the March 2017 Final Program EIR as allowed by CEQA Guidelines Sections 15168 and 15385. The SEA is a substitute CEQA document prepared in lieu of a Subsequent EIR with significant impacts (CEQA Guidelines Section 15162), pursuant to the South Coast AQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(1); codified in South Coast AQMD Rule 110). The SEA is also a public disclosure document intended to: 1) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental impacts of the proposed project; and 2) be used as a tool by decision makers to facilitate decision making on the proposed project.

Because new potentially significant adverse effects to hazards and hazardous materials that may result from implementing PAR 1110.2 was not analyzed at the project level in the March 2017 Final Program EIR for the 2016 AQMP, and because PARs 1110.2 and 1100 contain new information that was not previously considered, the South Coast AQMD, as lead agency for the proposed project has prepared this SEA with significant impacts pursuant to its Certified Regulatory Program. Because the proposed project may have statewide, regional, or areawide significance, a CEQA scoping meeting is required pursuant to Public Resources Code §21083.9(a)(2) and will be held at the South Coast AQMD's Headquarters in conjunction with the Public Workshop on July 31, 2019. Any CEQA-related comments made at the Public Workshop/CEQA scoping meeting relative to PARs 1110.2 and 1100 and responses to comments will be included in the Final SEA. Further, pursuant to CEQA Guidelines Section 15252, since significant adverse impacts have been identified, an alternatives analysis and mitigation measures are required.

The Draft SEA is being released and circulated for a 46-day public review and comment period from Friday, July 26, 2019 to Tuesday, September 10, 2019. Any comments on the analysis presented in this Draft SEA received during the public comment period will be responded to and included in the Final SEA.

The March 2017 Final Program EIR for the 2016 AQMP, upon which this Draft SEA relies, is available from the South Coast AQMD's website at: http://www.aqmd.gov/home/research/documents-reports/lead-agency-South Coast AQMD-projects/South Coast AQMD-projects---year-2017. This document may also be obtained by visiting the Public Information Center at South Coast AQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765; or by contacting Fabian Wesson, Public Advisor by phone at (909) 396-2039 or by email at PICrequests@aqmd.gov.

Prior to making a decision on the adoption of PARs 1110.2 and 1100, the South Coast AQMD Governing Board must review and certify the Final SEA, including responses to comments, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PARs 1110.2 and 1100.

PREVIOUS CEQA DOCUMENTATION

The Draft SEA is a comprehensive environmental document that analyzes potential environmental impacts from the proposed project. South Coast AQMD rules, as ongoing regulatory programs, have the potential to be revised over time due to a variety of factors (e.g., regulatory decisions by other agencies, new data, and lack of progress in advancing the effectiveness of control technologies to comply with requirements in technology forcing rules, etc.). The following summarizes the contents of the CEQA documents prepared for previous versions of Rule 1110.2 (which includes the March 2017 Final Program EIR for 2016 AQMP, upon which this SEA for PAR 1110.2 relies) and Rule 1100, in reverse chronological order and are included for informational purposes. For CEQA documents that were prepared after January 1, 2000, a link for downloading files from the South Coast AQMD's website is provided immediately following the summaries. In addition, hardcopies of these CEQA documents can be obtained by submitting a Public Records Act request to the South Coast AQMD's Public Records Unit.

Rule 1110.2

Rule 1110.2 was adopted in August 1990 and amended in September 1990, August 1994, December 1994, November 1997, June 2005, February 2008, July 2010, September 2012, December 2015, and June 2016. Several previous environmental analyses have been prepared that analyzed the past amendments to Rule 1110.2. Also, the 2016 AQMP was adopted in March 2017 and an environmental analysis for the entire 2016 AQMP, including control measure CMB-05 which applies to Rule 1110.2 equipment, was addressed in the March 2017 Final Program EIR.

Final Program Environmental Impact Report for the 2016 Air Quality Management Plan; March 2017 (SCH No. 2016071006): The 2016 AQMP identified control measures and strategies to bring the region into attainment with the revoked 1997 8-hour NAAQS (standard) (80 parts per billion (ppb)) for ozone by 2024; the 2008 8-hour ozone standard (75 ppb) by 2032; the 2012 annual PM2.5 standard (12 micrograms per cubic meter ($\mu g/m^3$)) by 2025; the 2006 24-hour PM2.5 standard (35 $\mu g/m^3$) by 2019; and the revoked 1979 1-hour ozone standard (120 ppb) by 2023. The 2016 AQMP consists of three components: 1) the South Coast AQMD's Stationary, Area, and Mobile Source Control Measures; 2) State and Federal Control Measures provided by the California Air Resources Board; and 3) Regional Transportation Strategy and Control Measures provided by the Southern California Association of Governments. The 2016 AQMP includes emission inventories and control measures for stationary, area and mobile sources, the most current air quality setting, updated growth projections, new modeling techniques, demonstrations of compliance with state and federal Clean Air Act requirements, and an implementation schedule for adoption of the proposed control strategy. A Final Program EIR was prepared for the project which identified potential adverse impacts that may result from implementing the project for the following environmental topic areas: 1) aesthetics; 2) air quality and GHGs; 3) energy; 4) hazards and hazardous materials; 5) hydrology and water quality; 6) noise; 7) solid and hazardous waste; and 8) transportation and traffic. The analysis concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. Since significant adverse environmental impacts were identified, an alternatives analysis was required by CEQA and prepared. The March 2017 Final Program EIR concluded that the project would have significant and unavoidable adverse environmental impacts even after mitigation measures were identified and applied. As such, mitigation measures were made a condition of the approval of the project and a Mitigation Monitoring and Reporting Plan was adopted. Findings were made and a Statement of Overriding Considerations was adopted. The South Coast AQMD Governing Board certified the Final Program EIR and approved the project on March 3, 2017. This document can be obtained by visiting the following website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf.

Final SEA for Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; June 2016: Rule 1110.2 was amended in June 2016 to provide relief for one facility that had a power purchase agreement (PPA) due to expire on October 1, 2022. Due to the constraints of the PPA, the facility was unable to economically meet the January 1, 2017 compliance deadline. As such, Rule 1110.2 was amended to exempt the facility from the emission requirements of the rule, contingent upon the facility submitting a retirement plan for the permanent shutdown of all equipment subject to Rule 1110.2 by the expiration date of the PPA. The project would result in a delay in achieving reductions of NOx, VOC, and CO emissions from the facility until 2022 instead of 2017, as previously analyzed in the December 2015 SEA. As a result, the quantity of peak daily NOx emission reductions foregone exceeded the South Coast AQMD's air quality significance threshold for operation. Since significant adverse significant operational air quality impacts were identified, an alternatives analysis was required and included. The June 2016 Final SEA concluded that the project would have significant and unavoidable adverse operational air quality impacts and there were no feasible mitigation measures identified at the time that would reduce or eliminate the expected delays in emission reductions. Findings were made and a Statement of Overriding Considerations was adopted. The South Coast AQMD Governing Board certified the Final SEA and approved the project on June 3, 2016. This document can be obtained by visiting the following website: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/par-1110_2-final-sea-combined.pdf

Final SEA for Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; December 2015: In December 2015, the South Coast AQMD amended Rule 1110.2 to delay implementation of NOx, VOC, and CO emission limits compliance dates for biogas engines because some emission control technologies were not available at the time. The quantity of delayed emission reductions for NOx, VOC, and CO was greater than the South Coast AQMD's air quality significance thresholds, thus the air quality impacts were considered significant. However, all of the delayed emission reductions were temporary because they will be recaptured over time such that the adverse air quality impacts would not be 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. The December 2015 Final SEA concluded that the project would have significant and unavoidable adverse operational air quality impacts and there were no feasible mitigation measures identified at the time that would reduce or eliminate the expected delays in emission reductions. Findings were made and a Statement of Overriding Considerations was adopted. The South Coast AQMD Governing Board certified the Final SEA and approved the project on June 4, 2015. 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; September 2012: The 2012 amendments to Rule 1110.2corrected the effective dates of new exhaust emission concentration limits for landfill and digester gas-fired engines that were originally scheduled to take effect July 1, 2012 as part of the February 2008 amendments to Rule 1110.2. Implementation of the new exhaust emission concentration limits for landfill and digester gas-fired engines was 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 analysis concluded that the 2012 amendments would not change the environmental analysis or conclusions in the previously certified December 2007 Final EA. As such, an Addendum was prepared for the project. Pursuant to CEQA Guidelines Section 15164(c), circulation of the Addendum for public review was not required. The South Coast AQMD Governing Board certified the Addendum to the 2007 Final EA and approved the project 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 SEA for Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; July 2010: The County of Riverside planned to rebuild and update the communications equipment an existing public safety communications site which is located at a remote location at a high altitude with heavy snowpack during the winter with no access to commercial power. The existing engines at this site were not sufficient to provide power to the upgraded equipment and the replacement engines had a rating greater than 50 bhp which would be subject to Rule 1110.2. The use of propane-fired engines was found to be not feasible as delivery of propane during winter would be difficult. Additionally, to comply with the limits of Rule 1110.2, the new engines would need to be equipped with SCR control technology which would require the transportation, storage and use of ammonia. As such, Rule 1110.2 was amended to exempt the County of Riverside's project from the requirements of the rule. The analysis concluded that less than significant impacts to the environmental topic areas of air quality and greenhouse gas emissions and energy would occur. The South Coast AQMD Governing Board certified the Final SEA and approved the project on July 9, 2010. This document can be obtained by visiting the following website: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2010/final-subsequent-environmental-assessment-for-proposed-amended-rule-1110-2.pdf

Final EA for Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; February 2008: Rule 1110.2 was amended to further reduce NOx, VOC and CO emissions from gaseous- and liquid-fueled ICEs. Amended Rule 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 were applicable to 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 identified potential adverse environmental impacts for the topic areas of air quality, hazards and hazardous materials, and solid and hazardous wastes. Since significant adverse impacts were identified, mitigation measures and an alternatives analysis were required and included. Some, but not all of the significant adverse impacts were mitigated to less than significant and a Mitigation Monitoring and Reporting Plan was adopted. Findings were made and a Statement of Overriding Considerations was adopted. The South Coast AQMD Governing Board certified the Final EA and approved the project on February 1, 2008. This document can be obtained by visiting the following website: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2008/rule-1110.2/finalea.pdf

Final EA for Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines and Rescission of Rule 1110.1 – Emissions from Stationary Internal Combustion Engines, June 2005: Rule 1110.2 was amended to: remove an exemption for all agricultural engines, except emergency standby engines and engines powering orchard wind machines; add more recordkeeping requirements; prohibit the 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 remove outdated rule language. Rule 1110.1 was rescinded because it was superseded by the requirements in amended Rule 1110.2. The analysis concluded that no significant impacts to any environmental topic area would occur. The South Coast AQMD Governing Board certified the Final EA and approved the project on June 3, 2005. This document can be obtained by visiting the following website: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2005/fea_1110.doc

Final SEA for the Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; November 1997: Rule 1110.2 was amended to: revise the requirements for portable engines to be consistent with federal and state regulations (i.e. CARB's Statewide Portable Engine and Equipment Registration Regulation); delete CO continuous emission monitoring system (CEMS) requirements; revise source testing requirements for all stationary engines; specify CEMs meet federal regulations; allow an alternative to CEMS, and authorize alternative emission limits equivalent to electrification. Further, the exemption for snow manufacture and ski lift operations was amended and exemptions were added for engines operated by the U.S. Navy on San Clemente Island, U.S. EPA non-road engines, engines registered by CARB. . The Final SEA concluded that the project would have significant and unavoidable adverse operational air quality impacts and there were no feasible mitigation measures or project alternatives identified at the time that would reduce or eliminate the expected delays in emission reductions. Findings were made and a Statement of Overriding Considerations was adopted. The South Coast AQMD Governing Board certified the Final SEA and approved the project on November 14, 1997.

Notice of Exemption for Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; December 1994: Rule 1110.2 was amended to clarify the meaning of the term "originally installed" for the purpose of determining compliance with the rule.

The amendments were administrative in nature and had no significant adverse impacts on the environment. Therefore, staff determined that it could be seen with certainty that the project would not result in a significant adverse effect on the environment. The South Coast AQMD Governing Board determined that the project was exempt from CEQA and approved the project on December 9, 1994. A Notice of Exemption was filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties.

Notice of Exemption for the Proposed Amended Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; August 1994: Rule 1110.2 was amended to: clarify that the original intent that continuous in-stack CO monitoring system would not be required if a continuous in-stack NOx monitoring system is also not required; and harmonize monitoring requirements in Rule 1110.2 with RECLAIM. The amendments were concluded to be administrative in nature and would not increase emissions. Therefore, staff determined that it could be seen with certainty that the project would not result in a significant adverse effect on the environment. The South Coast AQMD Governing Board determined that the project was exempt from CEQA and approved the project on August 12, 1994. A Notice of Exemption was filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties.

Final EA for Proposed Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; September 1990: The South Coast AQMD Governing Board directed staff to examine issues raised during the August 1990 public hearing for the adoption of Rule 1110.2 and provide recommendations. Rule 1110.2 was amended to: clarify that monitoring and periodic emission testing for NOx and CO was added for engines with a rating greater than 1,000 bhp; add a limited exemption for up-slope units at winter resort facilities that are operated less than 700 hours per year; and allow oil field-produced-gas-fueled engines to operate in any oil field service and not be limited to oil pumping engines. Since the circumstances of the original project analyzed in the August 1990 Final EA and the September 1900 modifications were essentially identical, staff determined that the September 1990 amendments did not constitute substantial changes to the August 1990 project requiring revisions to the environmental analyses. As such, no additional CEQA document was required. The South Coast AQMD Governing Board recertified the previously prepared August 1990 Final EA for Proposed Rule 1110.2 and approved the project on September 7, 1990.

Final EA for Proposed Rule 1110.2 - Emissions from Gaseous - and Liquid-Fueled Engines; August 1990: Rule 1110.2 was developed based on Control Measure C-2 of the March 1989 AQMP. The adopted rule required all stationary power-generating internal combustion (IC) engines with a rating greater than 50 bhp and all portable IC engines with a rating greater than 100 bhp to comply with NOx emission limits or electrify their processes by December 31, 1994. The Final EA identified potentially significant 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 levels through the application of mitigation measures pursuant to a Mitigation, Monitoring and Reporting Plan. Findings were made and a Statement of Overriding Considerations was adopted. The Governing Board approved the project and certified the Final EA on August 3, 1990.

Rule 1100

The decision to transition from NOx RECLAIM into a source-specific command-and-control regulatory structure was approved by the South Coast AQMD Governing Board as control measure CMB-05 in the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the March 2017 Final Program EIR. Rule 1100 is an administrative rule that was developed and adopted on December 7, 2018 to establish a compliance schedule for transitioning affected units NOx RECLAIM facilities to a command-and-control regulatory structure in accordance with the direction in CMB-05. NOx RECLAIM facilities with equipment subject to PAR 1110.2 will be required to meet the NOx emission limits in this rule in accordance with the implementation schedule outlined in PAR 1100.

Final SEA for Proposed Amended Rules 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters; and Proposed Rule 1100 – Implementation Schedule for NOx Facilities: Rules 1146, 1146.1, and 1146.2 were amended to achieve additional NOx emission reductions and to transition the RECLAIM program to a command-and-control regulatory structure, as soon as practicable, as directed by the Control Measure CMB-05 of the 2016 AQMP. Rule 1100 developed to establish the compliance schedule for RECLAIM facilities with Rule 1146 and/or 1146.1 units. Rule 1100 is an administrative rule that would not require any physical modifications to occur at affected facilities and thus, and would not cause any environmental impacts are expected to occur. However, Rules 1146 and 1146.1 included updated NOx emission limits for boilers, heaters, and steam generators and Rule 1146.2 updated the NOx emission limits for larger water heaters and small boilers and process heaters that would require activities such as installation of air pollution control systems which could create potentially significant adverse environmental impacts. The Final SEA concluded that although a reduction of NOx emissions are expected to create an environmental benefit and protect public health, the activities that the affected facilities may undertake to comply with the applicable NOx emission limits may also create potentially significant adverse environmental impacts for the topic of hazards and hazardous materials due to the storage and use of aqueous ammonia needed for the operation of SCR systems. As such, mitigation measures were required and crafted to reduce the severity of the effects of the potentially significant adverse hazards and hazardous materials impacts and these mitigation measures were made a condition of approval of this project; however, the impacts could not be mitigated to less than significant levels. Since significant adverse environmental impacts were identified, an alternatives analysis was required and included in the Final SEA. No other environmental topic areas were identified as having potentially significant adverse environmental impacts. Thus, a Mitigation, Monitoring, and Reporting Plan was required and adopted for this project. Findings were made and a Statement of Overriding Considerations was adopted. The South Coast AQMD Governing Board certified the Final SEA and approved the project on December 7, 2018. This document can be obtained by visiting the following website at: https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/pars-1146-series---final-sea---full-merge-113018.pdf

INTENDED USES OF THIS DOCUMENT

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

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

1. A list of the agencies that are expected to use the SEA in their decision-making;
2. A list of permits and other approvals required to implement the project; and
3. A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

In addition to the South Coast AQMD's Governing Board which will consider the SEA for the proposed project in their decision-making, the California Air Resources Board (CARB), a state agency, and the U.S. EPA, a federal agency, will be reviewing PARs 1110.2 and 1100 and all supporting documents, including the SEA, as part of the process for considering the inclusion of PARs 1110.2 and 1100 into the SIP. Moreover, PARs 1110.2 and 1100 are not subject to any other related environmental review or consultation requirements.

To the extent that local public agencies, such as cities, county planning commissions, et cetera, are responsible for making land use and planning decisions related to projects that must comply with the requirements in PARs 1110.2 and 1100, they could possibly rely on this SEA during their decision-making process. Similarly, other single purpose public agencies approving projects that utilize compliant equipment subject to PAR 1110.2 in accordance with the compliance schedule in PAR 1100 may rely on this SEA.

AREAS OF CONTROVERSY

CEQA Guidelines Section 15123(b)(2) requires a public agency to identify the areas of controversy in the CEQA document, including issues raised by agencies and the public. Over the course of developing the proposed project, there were some concerns regarding PAR 1110.2 that were expressed by representatives of industry and environmental groups, either in public meetings or in written comments. However, the issues raised were facility-specific and have been addressed and incorporated into the rule language. No concerns were raised relative to PAR 1100.

Pursuant to CEQA Guidelines Section 15131(a), "[e]conomic or social effects of a project shall not be treated as significant effects on the environment." CEQA Guidelines Section 15131(b) states further, "[e]conomic or social effects of a project may be used to determine the significance of physical changes caused by the project." Physical changes that may be caused by PARs 1110.2 and 1100 have been evaluated in Chapter 4 of this SEA. No direct or indirect physical changes resulting from economic or social effects have been identified as a result of implementing PARs 1110.2 and 1100.

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

EXECUTIVE SUMMARY

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

Summary of Chapter 1 – Executive Summary

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

Summary of Chapter 2 – Project Description

South Coast AQMD staff has been directed by the Governing Board to begin the process of transitioning equipment at facilities that are currently subject to facility permit requirements per South Coast AQMD Regulation XX – RECLAIM for NOx to instead be subject to an equipment-based command-and-control regulatory structure per South Coast AQMD Regulation XI – Source Specific Standards. To date, several rules have been amended in accordance with the Governing Board's direction. Currently, South Coast AQMD staff is continuing this transition process by proposing amendments to Rule 1110.2 and Rule 1100. PAR 1110.2 reflects the proposed project which is a culmination of recommendations made throughout the public engagement process including five working group meetings held at South Coast AQMD headquarters in Diamond Bar on June 28, 2018, September 27, 2018, February 6, 2019, April 24, 2019, and May 30, 2019. The working group is composed of representatives from the manufacturers, trade organizations, permit stakeholders, businesses, environmental groups, public agencies, consultants, and other interested parties. In addition, staff also discussed concepts for PARs 1110.2 and 1100 at the RECLAIM working group meetings held on November 8, 2017, January 11, 2018, June 14, 2018, July 12, 2018, November 8, 2018, December 13, 2018, January 11, 2019, February 14, 2019, and April 11, 2019. A Public Workshop and CEQA Scoping Meeting will be held on July 31, 2019. PAR 1110.2 will transition affected engines at NOx RECLAIM facilities to a command-and-control regulatory structure. Staff is proposing to amend PAR 1110.2 to: 1) expand its applicability to include internal combustion engines operated at RECLAIM and former-RECLAIM facilities which were not previously required to comply with Rule 1110.2; 2) require engines operated at RECLAIM and former RECLAIM facilities to comply with BARCT in accordance with existing Rule 1110.2 NOx limits; 3) establish ammonia slip limits and require ammonia emissions monitoring; 4) add definitions for additional clarity; 5) add language help facilitate the transition from RECLAIM such as removing references to Regulation XX; 6) revise exemptions to remove provisions that are obsolete; and 7) add an exemption for non-emergency engines operated at remote two-way radio transmission towers. Other minor changes are also proposed for clarity and consistency throughout the rule.

The proposed project is estimated to reduce NOx emissions by 0.29 ton per day after implementation of BARCT limits and will provide an overall environmental benefit to air quality. While reducing emissions of NOx and other contaminants will create an environmental benefit, activities that facility operators may undertake to comply with PAR 1110.2 may also create secondary potentially significant adverse environmental impacts the topic area of hazards and hazardous materials for the storage and use of aqueous ammonia.

In addition, amendments are proposed to Rule 1100 that would establish the compliance schedule qualifying stationary engines. PAR 1100 proposes to require: 1) two- and four-stroke lean-burn compressor gas engines to comply with the NOx emission limits in PAR 1110.2 within 24 months after a permit to construct is issued, or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021; and 2) all other qualifying engines to meet the NOx emission limits by December 31, 2023. However, PAR 1100 contains administrative changes that would not require any physical modifications to occur at affected facilities; thus, no environmental impacts are expected to occur.

A copy of PARs 1110.2 and 1100 can be found in Appendix A of this Draft SEA.

Summary of Chapter 3 – Existing Setting

Pursuant to CEQA Guidelines Section 15125, Chapter 3 – Existing Setting includes a description of the environmental topic areas that are potentially adversely affected by the proposed project. The analysis of the proposed project indicated that additional potentially significant adverse hazards and hazardous material impacts will occur; thus, the focus of the analysis in this SEA is limited to the environmental topic of hazards and hazardous materials. However, because physical modifications are expected to occur that may cause adverse, but less than significant, air quality impacts as a result of implementing PAR 1110.2, this chapter also addresses the topic of air quality.

The following discussion briefly highlights the existing setting for the topics of air quality and hazards and hazardous materials.

Air Quality

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

Hazards and Hazardous Materials

The 2016 AQMP contains control measures intended to improve overall air quality; however, the implementation of some control measures, such as CMB-05, may result in adverse hazards and hazardous materials impacts, either directly or indirectly. Hazard concerns are related to the potential for fires, explosions or the release of hazardous materials/substances in the event of an accident or upset conditions. The potential for hazards exist in the production, use, storage, and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the Basin in large quantities via all modes of transportation including rail, highway, water, air, and pipeline. Incidents of harm to human health and the environment associated with hazardous materials have created a public awareness of the potential for adverse effects from careless handling and/or use of these substances. As a result, a number of federal, state, and local laws have been enacted to regulate the use, storage, transportation, and management of hazardous materials and wastes. Chapter 3 discusses the existing hazards and hazardous materials setting.

Summary of Chapter 4 – Environmental Impacts

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

Potential Environmental Impacts Found To Be Significant

Hazards and hazardous materials is the only environmental topic area that has been identified in this SEA as having potentially significant adverse impacts if the proposed project is implemented. In addition, because physical modifications are expected to occur that may cause adverse, but less than significant, air quality impacts as a result of implementing PAR 1110.2, this chapter also analyzes the topic of air quality. PAR 1100 is an administrative rule that is not expected to require any physical modifications that would cause any adverse air quality impacts.

Potential Environmental Impacts Found Not To Be Significant

Because this SEA is a subsequent CEQA document to the March 2017 Final Program EIR for the 2016 AQMP, this SEA relies on the conclusions reached in this document as evidence for environmental areas where impacts were found not to be significant. The previous CEQA document reviewed approximately 17 environmental topic areas and analyzed whether the respective projects would create potentially significant adverse impacts.

The analysis in the March 2017 Final Program EIR for the 2016 AQMP concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. It is important to note, however, that for these environmental topic areas, not all of the conclusions of significance are applicable to the currently proposed project. Please see Chapter 4, Table 4-19, for a summary of the significant and unavoidable adverse environmental impacts identified in the March 2017 Final Program EIR and which ones apply to the proposed project.

The proposed project is expected to have: 1) significant effects that were not discussed in the previous March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(A)); and 2) significant effects that were previously examined that may be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(B)).

By preparing a SEA for the proposed project, since the topics of air quality and hazards and hazardous materials are the only environmental topic areas that would be affected by the proposed project, no other environmental topic areas have been evaluated in this SEA. Thus, the conclusions reached in this SEA are consistent with the conclusions reached in the previously certified CEQA document (e.g., the March 2017 Final Program EIR for the 2016 AQMP) that aside from the topic of hazards and hazardous materials, there would be no other significant adverse effects from the implementation of the proposed project. Thus, the proposed project would have no significant or less than significant direct or indirect adverse effects on the following environmental topic areas:

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

The March 2017 Final Program EIR for the 2016 AQMP can be found using the link referenced in Chapter 2.

Other CEQA Topics

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

Summary Chapter 5 - Alternatives

CEQA Guidelines Section 15126(e) requires a CEQA document to consider and discuss alternatives to the proposed project. Three alternatives to the proposed project are summarized in Table 1-1: 1) Alternative A – No Project; 2) Alternative B – Distributed Generation Limits; 3) Alternative C – Stricter Limits; and 4) Phased In Compliance Dates. Pursuant to the requirements in CEQA Guidelines Section 15126.6(b) to mitigate or avoid the significant effects that a project may have on the environment, a comparison of the project's potentially adverse impacts, but less than significant air quality impacts and the potentially significant adverse hazards and hazardous materials impacts to each of the project alternatives for the individual rule components that comprise the proposed project is provided in Table 1-2. Aside from potentially significant adverse impacts to hazards and hazardous materials from the catastrophic failure of an aqueous ammonia tank, no other potentially significant adverse impacts were identified for the proposed project. The proposed project is considered to provide the best balance between achieving requisite BARCT NOx emission reductions and the secondary adverse environmental impacts that may occur due to activities associated with the storage of hazardous materials associated with operating air pollution control equipment (e.g., SCRs) while achieving the overall objectives of the project. Therefore, the proposed project is preferred over the project alternatives.

Table 1-1
Summary of the Proposed Project and Alternatives

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Emission Limit	11 ppmv NOx @ 15% O2	No emission limits except for existing permit limits	Meet NOx, CO, and VOC limits listed in Table IV of Rule 1110.2 for new non-emergency engines driving electrical generators 0.070 lbs/MW-hr NOx 0.20 lbs/MW-hr CO 0.10 lbs/MW-hr VOC	7 ppmv NOx @ 15% O2	11 ppmv NOx @ 15% O2
Ammonia Slip Limit	5 ppm @ 15% O2	No emission limits except for existing permit limits	10 ppm @ 15% O2	5 ppm @ 15% O2	5 ppm @ 15% O2
Compliance Date	December 31, 2023[1]	N/A	December 31, 2023[1]	December 31, 2023[1]	December 31, 2023, except for compressor gas two-stroke or four-stroke lean-burn engines which will have a compliance date of December 31, 2027
Control Technology to Meet Project Objectives	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)	N/A	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)

1. Compressor gas two-stroke or four-stroke lean-burn engines have up to 24 months after a permit to construct is issued or up to 36 months if the application for permit to construct is submitted by July 1, 2021

Table 1-2
Comparison of Adverse Environmental Impacts of the Proposed Project and Alternatives

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Air Quality	Expected to result in NOx emission reductions of 0.29 ton per day. Engines at affect RECLAIM and former RECLAIM facilities will transition to a command-and-control regulatory structure. The affected lean burn engines are expected to be retrofitted with SCR technology, replaced, or retrofitted. Affected lean burn engines equipped with existing SCR systems are expected to modify their air pollution control system. The affected rich burn engines are equipped with NSCR systems and are expected to modify or replace their air-to-fuel ratio controller and catalyst. Upon project implementation, all affected engines at RECLAIM and non-RECLAIM facilities will achieve BARCT equivalency for NOx.	No NOx emission reductions will occur because RECLAIM facilities would not transition to a command-and-control regulatory structure such that their engines will not be retrofitted with air pollution control equipment, repowered, or replaced.	Expected to meet project objectives of BARCT for NOx but there would be a higher ammonia slip limit. In addition to NOx reductions, there will also be CO and VOC emission reductions.[1] Additional NOx reductions beyond the expected 0.29 ton of NOx per day of the proposed project but would expand the project scope to include non-RECLAIM facilities. Therefore, more facilities are expected to undergo construction on a peak day leading to potentially higher peak day emissions and subsequently significant impacts for air quality. Moreover, ammonia slip limit will be higher which will result in more ammonia emissions than the proposed project.	Expected to meet project objectives of BARCT for NOx and ammonia slip. Additional NOx reductions beyond the expected 0.29 ton of NOx per day of the proposed project but would expand the project scope to include non-RECLAIM facilities. More facilities are expected to undergo construction on a peak day leading to potentially higher peak day emissions and subsequently significant impacts for air quality.	Expected to meet project object of meeting BARCT emission limits for NOx and ammonia slip. NOx emission reductions will be delayed; however, there will be less impacts from construction emissions since engines used for natural gas compression and pipeline transmission have an additional 4 years to comply. As such, less facilities are expected to undergo construction on a peak day and therefore would result in lower peak day emissions.

1. The CO and VOC limits listed in Table IV of Rule 1110.2 are more stringent than the current limits for existing engines. Although the emission reductions are not quantified, the requirement to meet the lower CO and VOC limits of Table IV would result in CO and VOC emission reductions.

Table 1-2
Comparison of Adverse Environmental Impacts of the Proposed Project and Alternatives (continued)

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Significance of Air Quality Impacts	**Less than Significant:** No exceedances of the South Coast AQMD's air quality significance thresholds for any pollutant are expected to occur either during construction, during construction with overlapping operational impacts, or during operation after all construction is completed. As facilities implement modifications to retrofit existing stationary engines with air pollution control equipment (e.g., SCR technology/systems installation), or repower or replace existing stationary engines, emissions from construction are expected to occur. As affected RECLAIM and former RECLAIM facilities transition their existing engines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit (see Appendix F). Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur due to the project's overall NOx emission reductions.	**Not Significant:** Alternative A would not result in an exceedance of any South Coast AQMD air quality significance thresholds during construction or operation because no physical modifications would be expected to occur that would create construction emissions or reduce overall NOx emissions from the affected equipment. The South Coast AQMD will not achieve any emission reductions of NOx (a pre-cursor to the formation of ozone); thus, progress towards attainment for the South Coast AQMD for ozone is unlikely to occur.	**Significant:** Due to lower emissions limits, the construction schedules of the affected facilities under Alternative B would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day since both RECLAIM and non-RECLAIM facilities would be affected. As such, an exceedance of the South Coast AQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary engines on a peak day, than the proposed project. As facilities transition their existing stationary engines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.	**Significant:** Due to lower emissions limits, the construction schedules of the affected facilities under Alternative B would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day since both RECLAIM and non-RECLAIM facilities would be affected. As such, an exceedance of the South Coast AQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary engines on a peak day, than the proposed project. As facilities transition their existing stationary engines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.	**Less than Significant:** Due to the delayed compliance date for engines used for natural gas compression and pipeline transmission, the construction schedules of the affected facilities would be expected to occur over a longer period of time such that fewer facilities would be expected to undergo construction on a peak day. As such, exceedances of the South Coast AQMD's air quality significance threshold are not expected to occur and there will likely be less overlapping construction of SCR systems and/or retrofit, repower or replacement of engines on a peak day than the proposed project. As facilities transition their existing engines to achieve BARCT emission levels over the 4-year compliance period for engines not used for natural gas compression or distribution, and over the additional 3-year compliance period for the remaining engines, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Although there will be a delay in NOx emission reductions, upon completion of construction at all affected facilities, an overall benefit to air quality will occur due to the project's overall NOx emission reductions.

Table 1- 2
Comparison of Adverse Environmental Impacts of the Proposed Project and Alternatives (continued)

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Hazards and Hazardous Materials	Some of the affected engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Further, there are new ammonia delivery trips for facilities operating new SCR systems and one facility operating an existing SCR system will need additional urea deliveries. Ammonia is considered to be a hazardous material.	None of the affected facilities will be required to achieve BARCT level equivalency through compliance with the proposed project. As such, no engines will be retrofitted with SCR technology. Thus, no new ammonia storage tanks will be needed.	Some of the affected engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Further, there are new ammonia delivery trips for facilities operating new SCR systems and facilities operating an existing SCR system will use more ammonia or urea to meet the emission limits and subsequently, need additional ammonia/urea deliveries. Facilities are also expected to use more ammonia to achieve the NOx emission limits and with a higher ammonia slip limit. Ammonia is considered to be a hazardous material.	Some of the affected engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Further, there are new ammonia delivery trips for facilities operating new SCR systems and facilities operating an existing SCR system will use more ammonia or urea to meet the emission limits and subsequently, need additional ammonia/urea deliveries. Ammonia is considered to be a hazardous material.	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Ammonia is considered to be a hazardous material.

Table 1- 2
Comparison of Adverse Environmental Impacts of the Proposed Project and Alternatives (concluded)

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Significance of Hazards and Hazardous Materials Impacts	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required.	**Not Significant:** The construction of SCR systems would not be necessary; thus, there would be no need to use ammonia or build new ammonia storage tanks. No significant hazards or hazardous materials impacts would be expected to occur.	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required. There would be more affected facilities than the proposed project. The level of significance in Alternative B would be greater than the proposed project.	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required. There would be more affected facilities than the proposed project. The level of significance in Alternative C would be greater than the proposed project but less than Alternative B.	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required. The number of affected facilities would be the same as the proposed project. The level of significance in Alternative D would be equivalent to the amount in the proposed project.

CHAPTER 2

PROJECT DESCRIPTION

Project Location

Project Background

Project Objectives

Project Description

Summary of Affected Equipment

Technology Overview

PROJECT LOCATION

The proposed project applies to all stationary and portable gaseous- and liquid-fueled engines with a rating greater than 50 bhp operated at RECLAIM and non-RECLAIM facilities. The South Coast AQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of South Coast AQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. A federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (see Figure 2-1).

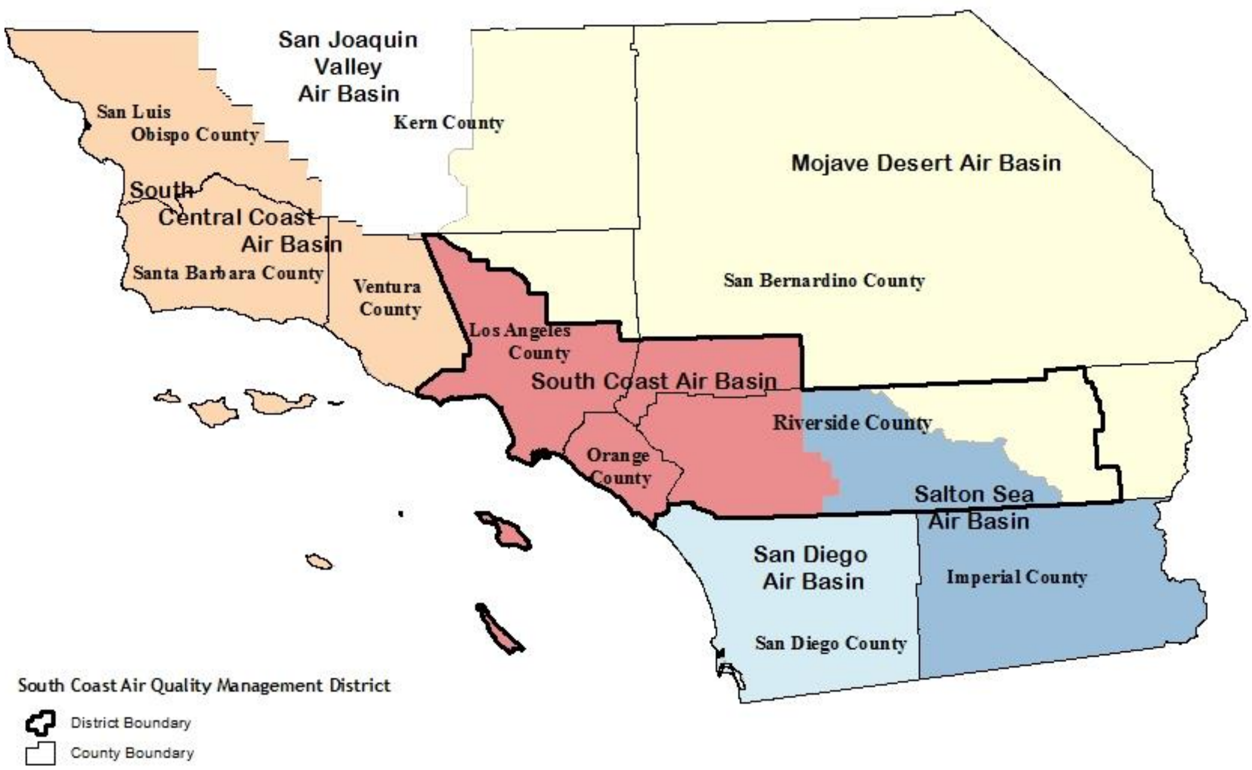

Figure 2-1
Southern California Air Basins

PROJECT BACKGROUND

Rule 1110.2 – Emissions from Gaseous- and Liquid-Fired Engines was adopted by the AQMD Governing Board on August 3, 1990 which required that either: 1) reductions of NOx emissions by over 90 percent via one out of two compliance limits specified in the rule; or 2) permanent removal of engines from service or replacement with electric motors. Rule 1110.2 was amended: 1) in September 1990 to clarify rule language; and 2) in August 1994 and December 1994 to modify the CO monitoring requirements and to clarify rule language. The November 1997 amendments to Rule 1110.2 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 June 2005 amendments to Rule 1110.2 removed an exemption for agricultural engines so that they would subject to the rule.

To address widespread non-compliance with stationary IC engines, the February 2008 amendments to Rule 1110.2: augmented the source testing, continuous monitoring, inspection and maintenance (I&M), and reporting requirements of the rule to improve compliance; and required stationary, non-emergency engines to meet emission standards equivalent to current BACT for NOx and VOC and almost to BACT for CO to partially implement the 2007 AQMP control measure for Facility Modernization (MCS-001). Additionally, the February 2008 amendments to Rule 1110.2: required new electric generating engines to limit emissions to levels nearly equivalent to large central power plants, achieving standards that are at or near the CARB 2007 Distributed Generation Emissions Standards; 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 resolution for the adoption of the February 2008 amendments to Rule 1110.2 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 commitments contained in the resolution for the adoption of the February 2008 amendments to Rule 1110.2. The Interim Technology Assessment summarized the biogas engine control technologies to date and the status of on-going demonstration projects. Due to 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 in Rule 1110.2.

Amendments to Rule 1110.2 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 to Rule 1110.2 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, South Coast AQMD 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 were not available, 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 U.S. EPA's breakdown provisions and to allow the rule to be incorporated into the SIP.

Rule 1110.2 was amended in July 2016 to provide relied to a biogas facility from emission requirements specified in Table III-B of the rule 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.

In the 2016 AQMP, control measure CMB-05 – Further NOx Reductions from RECLAIM Assessment, committed to achieving NOx emission reductions of five tons per day by 2025, along with achieving BARCT level equivalency for all facilities through a command-and-control regulatory structure, while alleviating facilities from installing technology that would quickly become obsolete or serve as an intermediate technology. The process of transitioning NOx RECLAIM facilities to a command-and-control regulatory structure will ensure that the affected equipment will meet BARCT level equivalency as soon as practicable. As a result of control measure CMB-05 from the 2016 AQMP and ABs 617 and 398, South Coast AQMD staff was directed by the Governing Board to begin the process of transitioning equipment at NOx RECLAIM facilities from a facility permit structure to an equipment-based command-and-control regulatory structure per South Coast AQMD Regulation XI – Source Specific Standards. South Coast AQMD staff has proposed amendments to Rule 1110.2 to transition equipment from the NOx RECLAIM program to a command-and-control regulatory structure, while achieving BARCT. PAR 1110.2 will assist in the transition of 21 facilities out of the RECLAIM program. Further, Rule 1100 is an administrative rule that was developed and adopted on December 7, 2018 to establish a compliance schedule for transitioning affected units NOx RECLAIM facilities to a command-and-control regulatory structure in accordance with the direction in CMB-05. NOx RECLAIM facilities with equipment subject to PAR 1110.2 will be required to meet the NOx emission limits in this rule in accordance with the implementation schedule outlined in PAR 1100.

PROJECT OBJECTIVES

The main objectives of the proposed project are to: 1) reduce NOx emissions from internal combustion engines and transition these equipment that are currently permitted under the NOx RECLAIM program to a command-and-control regulatory structure; and 2) implement Control Measure CMB-05 by requiring stationary internal combustion engines operating at RECLAIM or former RECLAIM facilities to comply with current BARCT in accordance with a implementation schedule for transitioning affected units NOx RECLAIM facilities to a command-and-control regulatory structure; 3) establish new ammonia (NH3) slip limits and require ammonia emissions monitoring; and 4) add clarification to its applicability to engines operated at remote radio transmission towers.

PROJECT DESCRIPTION

If adopted, PAR 1110.2 would: 1) include internal combustion engines operated at current and former RECLAIM facilities which were not previously subject to Rule 1110.2 and require them to comply with BARCT; 2) establish ammonia slip limits and require ammonia emissions monitoring; 3) exempt non-emergency engines operated at remote two-way radio transmission towers. Additionally, staff is proposing to add definitions for additional clarity, add language to help facilitate the transition from RECLAIM, and revise exemptions to remove provisions that are obsolete. Implementation of the proposed project is estimated to reduce NOx emissions by 0.29 ton per day, and is expected to be achieved by retrofitting existing internal combustion engines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/systems, or by repowering or replacing existing internal combustion engines.

PAR 1100 would require: 1) two- and four-stroke lean-burn compressor gas engines to comply with the NOx emission limits in PAR 1110.2 within 24 months after a permit to construct is issued, or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021; and 2) all other qualifying engines to meet the NOx emission limits by December 31, 2023.. Staff will also add definitions to PAR 1100 for clarity.

The following is a detailed summary of key elements contained in PARs 1110.2 and 1100. A copy of PARs 1110.2 and 1100 can be found in Appendix A.

PAR 1110.2

Definitions – Subdivision (c)
Staff proposes to add the following new definitions to clarify and explain key concepts:

- Former RECLAIM Facility
- Non-RECLAIM Facility
- RECLAIM Facility

Requirements – Subdivision (d)
Staff is proposing to modify clause (d)(1)(L)(iv) to remove the reference to Regulation XX and specify that the subparagraph is applicable to both RECLAIM and former RECLAIM facilities. Also, there are three clauses that follow clause (d)(1)(B)(ii) which are not currently delineated with a separate designation. Staff is proposing to designate those clauses as (d)(1)(B)(iii)-(v) as follows:

- (d)(1)(B)(iii): The concentration limits effective on and after July 1, 2010 shall not apply to engines that operate less than 500 hours per year or use less than 1×10^9 British Thermal Units (Btus) per year (higher heating value) of fuel.

- (d)(1)(B)(iv): If the operator of a two-stroke engine equipped with an oxidation catalyst and insulated exhaust ducts and catalyst housing demonstrates that the CO and VOC limits effective on and after July 1, 2010 are not achievable, then the Executive Officer may, with U. S. EPA approval, establish technologically achievable, case-by-case CO and VOC limits in place of the concentration limits effective on and after July 1, 2010. The case-by-case limits shall not exceed 250 ppmvd[8] VOC and 2000 ppmvd CO.

[8] Parts per million by volume on a dry basis

- (d)(1)(B)(v): If the operator of an engine that uses non-pipeline quality natural gas demonstrates that due to the varying heating value of the gas a longer averaging time is necessary, the Executive Officer may establish for the engine a longer averaging time, not to exceed 24 hours, for any of the concentration limits of Table II. Non-pipeline quality natural gas is a gas that does not meet the gas specifications of the local gas utility and is not supplied to the local gas utility.

One affected RECLAIM facility will be subject to clause (d)(1)(B)(v) upon approval of PAR 1110.2. The facility operates a produced gas-fired engine that was permitted to meet 6 ppm NOx averaged over a 24-hour period as well as a 24 ppm NOx limit averaged over a one hour period. The fuel of this engine does not meet pipeline quality natural gas specifications. The proposed language would extend the six-hour averaging time maximum to 24 hours. Since the stationary engine is currently permitted to meet six ppm NOx averaged over 24 hours, this change is not expected to result in any adverse environmental impacts.

Several two-stroke natural gas-fired engines will be affected by PAR 1110.2, which are utilized for natural gas compression and pipeline distribution. Two-stroke engines have unique characteristics that can present some challenges in complying with the 11 ppm NOx limit. To address concerns for these specific engines, staff is proposing to include the following language:

- (d)(1)(B)(vi): For owners and operators of two-stroke engines equipped with selective catalytic reduction pollution control equipment, an averaging time of 60 minutes shall be used for demonstrating compliance with the NOx requirements of Table II.

To meet current BARCT, operators are expected to install post-combustion emission controls. Lean-burn engines will likely need to be retrofitted with SCR systems which use ammonia. However, there is a possibility of ammonia emissions due to unreacted ammonia. The unreacted ammonia is referred to as ammonia slip. To minimize ammonia slip emissions, staff is proposing to add clause (d)(1)(B)(vii) to limit ammonia emissions to five ppmv (referenced at 15 percent oxygen on a dry basis, averaged over a period of 60 consecutive minutes). This limit will apply to the installation of new SCR systems or modification of existing SCR systems upon approval of PAR 1110.2.

Compliance – Subdivision (e)

Staff is proposing to add subparagraph (e)(3)(C) to require operators of stationary engines located at a RECLAIM or former RECLAIM facility that are required to modify or install CEMS to submit applications for the new or modified CEMS within 90 days of exiting from the RECLAIM program.

Staff is also proposing to add paragraph (e)(10) which specifies that engines at RECLAIM or former RECLAIM facilities will be required to meet the applicable NOx limits in Table II of Rule 1110.2 in accordance to the schedule established in Rule 1100.

Monitoring, Testing, Recordkeeping and Reporting – Subdivision (f)

Staff is proposing to remove references to Regulation XX from this subdivision as part of the transition to a command-and-control structure. Facilities will also be required to: comply with subparagraph (f)(1)(E) or paragraph (f)(2) once they exit from the RECLAIM program; and keep a monthly engine operating log for stationary and portable engines instead of quarterly logs.

Additionally, staff is proposing to add clause (f)(1)(A)(iii) which requires owners and operators of each stationary engine with SCR to either conduct source testing pursuant to clause (f)(1)(C)(iii) or to use an approved ammonia CEMS to demonstrate compliance with ammonia emission limits.

Staff is also proposing to add the following source testing requirements to clause (f)(1)(C)(iii) and modify Table IX to include Test Method South Coast Air Quality Management District Method 207.1 for Ammonia:

- The owner or operator of each stationary engine with selective catalytic reduction pollution control equipment not utilizing a certified ammonia CEMS shall conduct source tests quarterly to demonstrate compliance during the first 12 months of operation of the pollution control equipment and every calendar year thereafter (within the same calendar month of the previous source test) after four consecutive sources tests demonstrate compliance with the ammonia emission limit. If the engine has not been operated within three months of the date a source test is required, the operator may utilize the provisions for extension of the source testing deadlines contained under clause (f)(1)(C)(i).

Exemptions – Subdivision (i)
Staff is proposing to add subparagraph (i)(1)(M) to exempt stationary engines used exclusively for electrical generation at remote two-way transmissions towers where no utility, electricity, or natural gas is available within a 0.5 mile radius. The engines must also have a manufacturer's rating of 100 bhp or less, and be fired exclusively on diesel #2, compressed natural gas (CNG), or liquefied petroleum gas (LPG). South Coast AQMD Rule 219 was amended in May 2013 to exempt engines used exclusively for electrical generation at remove two-way radio transmission towers where no utility, electricity or natural gas is available within one half mile radius, with a rating of 100 bhp or less. Impacts associated with this exemption were analyzed in the May 2013 Final EA for PARs 219 and 222[9]. In addition to the exemption from Rule 219, staff had also intended to exempt the engines from Rule 1110.2. The analysis in the May 2013 Final EA for PARs 219 and 222 took into account the NOx emission reductions foregone as a result of these engines being exempted from Rules 219 and 1110.2.

The exemption was further expanded to include engines fired on LPG and CNG in the May 2017 amendment of Rule 219. Based on the Final Staff Report which was included in the May 5, 2017 Governing Board Package[10], NOx and PM emissions from combustion of LPG- and CNG-fired engines would be less than emissions from diesel-fired engines. Also, since the engines are operated at remote locations, operation of these engines are unlikely to result in any health risks above one in million. The project was determined to be exempt from CEQA and the project was approved by the Governing Board. Therefore, no additional impacts are expected from exempting engines used exclusively for electrical generation at remove two-way radio transmission towers where no utility, electricity or natural gas is available within one half mile radius, with a rating of 100 bhp or less from the requirements of Rule 1110.2.

[9] South Coast AQMD, Final Environmental Assessment for: Proposed Amended Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II, Proposed Amended Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II, certified May 2017, http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2013/219and222finalea.pdf

[10] South Coast AQMD, Governing Board Package for Public Hearing to Amend Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II and Amend Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II, May 2017, http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-may5-027.pdf

Rule 1110.2 previously exempted engines operated by the County of Riverside for the purpose of public safety communication at Santa Rosa Peak under subparagraph (i)(1)(H). The site was located at a high elevation with no access to electric power or natural gas. The engines operated by the County of Riverside at Santa Rosa Peaks qualify for the newly proposed exemption from Rule 1110.2 under subparagraph (i)(1)(M). Therefore, subparagraph (i)(1)(H) will be amended to remove language specifically exempting those engines.

For additional clarity, staff is proposing to add paragraph (i)(3) to exempt any engine at a RECLAIM or former RECLAIM facility that is subject to a NOx emission limit in a different rule for an industry-specific category defined in Rule 1100.

Averaging Time Provisions for Biogas Facilities

Staff is proposing to clarify the averaging time provisions for biogas engines in subparagraph (d)(1)(I). Biogas engines are currently allowed to have longer averaging times if the operator can demonstrate that NOx emissions are at least 10 percent below the 11 ppm limit over a four-month period. However, it was not clear whether initial four-month period would occur immediately upon start up. Therefore, staff is proposing the following language for subparagraph (d)(1)(I):

- Upon startup of a new engine installation that is equipped with catalytic controls or retrofitted with catalytic controls for an existing engine, for determining compliance with the NOx and/or CO limits of Table III-B, an operator of a biogas engine with CEMS may utilize a monthly fixed interval averaging time for the first four months after startup. After the initial four-month startup period, an operator of a biogas engine may determine compliance by utilizing a 24-hour averaging time, provided the operator demonstrates through CEMS data that the engine is achieving a concentration at or below 9.9 ppmv for NOx and/or 225 ppmv for CO (if CO is selected for averaging), each corrected to 15 percent oxygen (O2), over a four-month rolling time period. If during any four-month period, the engine is not achieving the emissions criteria contained in this subparagraph, the engine shall revert to 15-minute averaging, but can resume 24-hour averaging if the engine can demonstrate the aforementioned emissions criteria over a four-month period. Procedures for demonstrating the emissions criteria contained in this subparagraph, for demonstrating compliance with 24-hour averaging, and for reverting to 15-minute averaging shall be contained in the facility's Inspection and Monitoring plan, as specified in subparagraph (f)(1)(D). Exceedances of the emissions criteria contained in this subparagraph shall be reported, pursuant to the requirements in clause (f)(1)(H)(iii).

The existing conditions for determining compliance using either a monthly or 24-hour averaging time through CEMS were previously contained in clauses (d)(1)(I)(i) through (iv). Staff is proposing to move these requirements to subclauses (d)(1)(I)(i)(I) through (IV) to further clarify that the requirements are specific to demonstrating compliance with subparagraph (d)(1)(I).

To assist tracking the ongoing requirements, staff is proposing to add language under subclause (f)(1)(D)(i)(I) to require facilities with biogas engines using longer averaging times and utilizing CEMS for compliance to submit a Implementation and Monitoring (I&M) Plan. Staff is proposing to include the following I&M Plan requirements for biogas engines:

- For biogas engines using NOx and/or CO CEMS to demonstrate compliance by using a longer averaging time:

- procedures for demonstrating that the NOx and/or CO emissions are at or below 9.9 ppmv for NOx and 225 ppmv for CO (if CO is selected for averaging) over a four-month period.
- procedures for demonstrating ongoing compliance with a 24-hour fixed interval averaging time, if the requirements in paragraph F.1 are met.
- procedures for reverting back to a 15-minute averaging time in the event that the NOx and/or CO emissions are not at or below 9.9 ppmv for NOx and 225 ppmv for CO (if CO is selected for averaging).

PAR 1100

Applicability – Subdivision (b)
Staff is proposing expand the applicability of the rule by adding Rule 1110.2 – Emissions from Gaseous- and Liquid- Fueled Engines to this subdivision.

Definitions – Subdivision (c)
Staff proposes to add the following new definitions to clarify and explain key concepts:

- Compressor gas engine
- Engine
- Location
- Portable Engine
- Stationary Engine

Rule 1110.2 Implementation Schedule – Subdivision (d)
Stall is proposing to add the following implementation schedule for engines operated at RECLAIM or former RECLAIM facilities:

(1) An owner or operator of a RECLAIM or former RECLAIM facility with any stationary engine(s) subject to and not exempt by Rule 1110.2 shall meet the emission limits listed in Rule 1110.2 paragraph (d)(1) on or before December 31, 2023; however, compressor gas two-stroke and four-stroke lean-burn engines shall meet the emission limits listed in Rule 1110.2 paragraph (d)(1) within 24 months after an applicable permit to construct is issued by the Executive Officer, or within 36 months after an applicable permit to construct is issued by the Executive Officer if the application is submitted by July 1, 2021.

(2) An owner or operator of a RECLAIM or former RECLAIM facility with any portable engine(s) subject to Rule 1110.2 shall meet the conditions listed in Rule 1110.2 paragraph (d)(2).

SUMMARY OF AFFECTED EQUIPMENT

Among the facilities subject to PAR 1110.2, 76 internal combustion engines at 21 RECLAIM facilities are expected to be affected by PAR 1110.2. Of these engines, 21 currently meet the proposed NOx emission limit of 11 ppmv and eight portable engines at three facilities are expected to be phased out. Additionally, two engines that are limited to operating 499 hours per year do not have to meet the 11 pppmv NOx emission limit. Among the remaining 10 facilities affected by PAR 1110.2, approximately 45 engines would need to be replaced, repowered, or retrofitted with air pollution control equipment in order to comply with the NOx limits in PAR 1110.2. Upon full implementation of BARCT, PAR 1110.2 is estimated to reduce NOx emissions by approximately 0.29 ton per day. Table 2-1 identifies the industry sectors, as classified by the North American Industry Classification System (NAICS) code, and the number of respective internal combustion engines at facilities that would be subject to the requirements in PAR 1110.2.

Table 2-1
Affected Industries Subject to PAR 1110.2

NAICS Codes	Description of Industry	Number of Facilities	Number of Units
713110	Amusement and Theme Parks	1	1
312120	Breweries	1	4
211111	Crude Petroleum and Natural Gas Extraction	8	23
212322	Industrial Sand Mining	1	1
331110	Iron and Steel Mills and Ferroalloy Manufacturing	1	1
221210	Natural Gas Distribution	2	17
322130	Paperboard Mills	1	1
486210	Pipeline Transportation of Natural Gas	2	16
488310	Port and Harbor Operations	1	2
481111	Scheduled Passenger Air Transportation	1	3
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	1	1
713920	Skiing Facilities	1	6
	Total	21	76

Table 2-2 identifies the number of internal combustion engines that would require modifications to comply with BARCT for the 10 affected facilities. The following list describes internal combustion engines that would require modifications in order to meet the updated BARCT NOx and ammonia concentration limits in PAR 1110.2:

1) Engines with existing SCR or NSCR systems: There are six lean burn engines with existing SCR systems that may need modifications in order to comply with PAR 1110.2, if they continue operating. Compliance with PAR 1110.2 would require modifications to the existing SCR systems or additional ammonia deliveries. There are currently ten engines equipped with NSCR systems. Since low NOx emissions can be achieved with this technology, minimal modifications such as replacing or tuning the air-to-fuel ratio controller and/or replacing the catalysts are expected. Since replacing the existing catalyst will require more construction, for this analysis, it is assumed that 16 SCR or NSCR systems will need to have catalyst replacements.

2) Lean burn engines without SCR: There are currently 15 lean burn engines that are operated at RECLAIM facilities which are not equipped with SCR and are expected to need to retrofit the existing engines with new SCR system and would also include installation of an ammonia or urea tank. Subsequently, ammonia or urea deliveries would also be required once the SCR system is operational.

3) Lean burn engines without SCR to be repowered: There are eight lean burn engines at two facilities currently used to drive gas compressors that will be repowered. In lieu of retrofitting the engine with SCR, the engines will be replaced with natural gas-fired stationary gas turbines equipped with SCR. The stationary gas turbines, once constructed and operational, will be subject to the requirements of South Coast AQMD Rule 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines. Although three of the turbines were included in the analysis in the Final SEA for Rule 1134 which was certified on April 5, 2019[11], for the purposes of this CEQA analysis, the repowering of all eight lean burn engines with eight stationary gas turbines with SCR will be evaluated.

4) Stationary engines located in the Outer Continental Shelf (OCS): There are six lean burn engines located in the OCS that may need modifications in order to comply with PAR 1110.2 if they continue operating. The most effective NOx emission control technology for lean burn engines typically entails installing an SCR system as the primary post-combustion technology for NOx reduction. Some engines located in the OCS are equipped with SCR which utilizes urea injection. However, those engines have ratings at less than 200 bhp each. The six lean-burn engines are much larger (853 bhp) and would require a substantial quantity of aqueous ammonia or urea to comply with the proposed emission limits. Since there is no way to safely deliver and store aqueous ammonia or urea located in the OCS due to space constraints on the platforms and risk of exposure during catastrophic failure of an ammonia tank to workers, replacement or repowering of the existing stationary engines with equipment utilizing NSCR technology such as three-way catalyst is the most likely scenario to ensure OCS stationary gas turbines meet BARCT for NOx.

Table 2-2
Summary of Stationary Engines and Expected Modifications

Description of Modifications	Total
Existing SCR or NSCR expected to be modified	16
Engines expected to be retrofitted with new SCR	15
Engines expected to be repowered with new stationary gas turbines and new SCR	8
Engines expected to be replaced and with new NSCR catalyst (OCS facility)	6
Total Number of Affected Stationary Engines	45

The total NOx inventory for the RECLAIM units affected by PAR 1110.2 is estimated to be 0.37 ton per day and is summarized in Table 2-3.

[11] South Coast AQMD, Final Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, certified April 2019, http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2019/par-1134---final-sea_with_appdx.pdf

Table 2-3
2017 NOx Emissions Inventory

Engine Type	Emissions (ton per day)
Two-Stroke Lean Burn	0.12
Four-Stroke Lean Burn	0.23
Rich Burn	0.02
Total	**0.37**

TECHNOLOGY OVERVIEW

Combustion is a high temperature chemical reaction resulting from burning a gas, liquid, or solid fuel (e.g., natural gas, diesel, fuel oil, gasoline, propane, and coal) in the presence of air (oxygen and nitrogen) to produce: 1) heat energy; and 2) water vapor or steam. An ideal combustion reaction is when the entire amount of fuel needed is completely combusted in the presence of air so that only carbon dioxide (CO2) and water are produced as by-products. However, since fuel contains other components such as nitrogen and sulfur plus the amount of air mixed with the fuel can vary, in practice, the combustion of fuel is not a "perfect" reaction. As such, uncombusted fuel plus smog-forming by-products such as NOx, SOx, CO, and soot (solid carbon) can be discharged into the atmosphere.

Of the total NOx emissions that can be generated, there are two types of NOx formed during combustion: 1) thermal NOx; and 2) fuel NOx. Thermal NOx is produced from the reaction between the nitrogen and oxygen in the combustion air at high temperatures while fuel NOx is formed from a reaction between the nitrogen already present in the fuel and the available oxygen in the combustion air. The amount of fuel NOx generated is dependent on fuel type and boilers, engines, and gas turbines all generate thermal NOx as a combustion by-product. The following provides a brief description of the various types of existing combustion equipment that may be affected by PAR 1110.2 and subsequently retrofitted with NOx control equipment.

Gaseous and Liquid Fuel Powered Internal Combustion Engines: Internal combustion engines create power by mixing fuel in a cylinder controlled by valves in a timed cycle. The cylinder contains a piston which compresses the fuel igniting it by either a spark (spark ignition) or until the fuel ignites from pressure (compression ignition). The expansive force created by the ignited fuel is transferred by the piston through a connecting rod to a crankshaft which transfers the resulting power to useable work. The power created can generate electricity or by an external shaft for propulsion. The extreme heat created by the combustion of the fuel exits the engine through the exhaust system at a temperature sufficient to create many undesirable compounds such as NOx and the formation of other greenhouse gases. The emissions are often controlled by complex catalyst systems for compression ignition engines and a single simple catalyst for spark ignited engines. For the purpose of the analysis in this SEA, controlling NOx emissions from diesel fueled internal combustion engines is assumed to be accomplished with SCR technology.

One portion of the BARCT assessment for PAR 1110.2 evaluated technologically feasible NOx emissions control technologies specific to engines. The BARCT assessment identified the following technologies that could be employed to achieve BARCT compliance in the event that a facility operator chooses to install new or modify their existing air pollution control equipment to reduce NOx emissions from engines: 1) SCR for lean-burn engines; and 2) NSCR for rich-burn engines. An emissions control system developed by Tecogen was identified as an alternative to these two technologies. The Tecogen technology utilizes two non-selective catalysts in series with a heat exchanger as well as air injection to achieve low NOx and CO emissions. However, this technology is only effective for certain rich burn, natural gas engines. Additionally, this technology has only been used to retrofit smaller engines. As such, it will not likely be used to retrofit any rich burn engines operated at affected RECLAIM facilities until the technology can be demonstrated that it can achieve BARCT emission levels when used on larger engines. PAR 1110.2 is expected to result in 21 facilities either installing new or modifying existing air pollution control equipment in order to meet BARCT and reduce NOx emissions. The type of air pollution control equipment that is used at a facility to reduce NOx emissions is dependent upon a variety of factors but is mainly dependent on whether an engine is lean-burning or rich-burning. Operational and space constraints such as the engines operated at facilities located at the OCS are also contributing factors. The following summarizes the technology assessment of post-combustion technologies that were analyzed as part of the BARCT assessment for PAR 1110.2.

Selective Catalytic Reduction

Selective catalytic reduction (SCR) is a post-combustion control technology that is considered to be BACT for new equipment and BARCT for existing equipment. SCR can be used, if cost-effective, for NOx control of combustion sources like engines, boilers, process heaters, and gas turbines and it is capable of reducing NOx emissions by as much as 90 percent or higher. A typical SCR system design consists of an ammonia or urea reductant storage tank, ammonia vaporization and injection equipment, an SCR reactor with catalyst, an exhaust stack plus ancillary electronic instrumentation and operations control equipment. The way an SCR system reduces NOx is by a matrix of nozzles injecting a mixture of reductant and air into the flue gas exhaust stream from the combustion equipment. As this mixture flows into the SCR reactor with catalyst, the catalyst, reductant, and oxygen in the flue gas exhaust react primarily (i.e., selectively) with NO and NO2 to form nitrogen and water. The amount of reductant introduced into the SCR system is approximately a one-to-one molar ratio of reductant to NOx for optimum control efficiency, though the ratio may vary based on equipment-specific NOx reduction requirements. There are two main types of catalyst structures: the first type is one in which the catalyst is coated onto a metal structure and the second type is one with a ceramic-based catalyst onto which the catalyst components are calcified. Commercial catalysts used in SCRs are available in two forms: 1) solid, block configurations or 2) modules, plate or honeycomb type. Catalysts are comprised of a base material of titanium dioxide (TiO2) that is coated with either tungsten trioxide (WO3), molybdic anhydride (MoO3), vanadium pentoxide (V2O5), or iron oxide (Fe2O3). These materials are used for SCRs because of their high activity, insensitivity to sulfur in the exhaust, and useful life span of approximately five years. Ultimately, the material composition of the catalyst is dependent upon the application and flue gas conditions including but not limited to gas composition and temperature.

For conventional SCRs, the minimum temperature for NOx reduction is 500 degrees Fahrenheit (^{o}F) and the maximum operating temperature for the catalyst is 800 ^{o}F. Zeolite SCR catalysts have a higher temperature operating range. Depending on the application, the type of fuel combusted, and the presence of sulfur compounds in the exhaust gas, the optimum flue gas temperature of an SCR system is case-by-case and will range between 550 ^{o}F and 750 ^{o}F to limit the occurrence of several undesirable side reactions at certain conditions. One of the major concerns associated with SCRs is the oxidation of sulfur dioxide (SO2) in the exhaust gas to sulfur trioxide (SO3) and the subsequent reaction between SO3 and ammonia to form secondary particulates such as ammonium bisulfate or ammonium sulfate. The formation of either ammonium bisulfate or ammonium sulfate depends on the amount of SO3 and ammonia present in the flue gas and can cause equipment plugging downstream of the catalyst. The presence of particulates, heavy metals and silica in the flue gas exhaust can also limit catalyst performance. The production of secondary particulates can be substantially minimized by reducing the quantity of injected ammonia, maintaining the exhaust temperature within a predetermined range, and maintaining a precise NOx to ammonia molar ratio to minimize the production of unreacted ammonia which is commonly referred to as ammonia slip. Depending on the type of combustion equipment utilizing SCR technology, the typical amount of ammonia slip is typically zero to five ppmv.

Lean-burn engines can use SCR to control NOx. All lean-burn, non-biogas engines are controlled with the exception of RECLAIM engines, which are exempt from the NOx limits in Rule 1110.2.

Oxidation Catalyst

Oxidation catalysts have two simultaneous tasks: 1) oxidation of carbon monoxide to carbon dioxide ($2CO + O_2 \rightarrow 2CO_2$) and 2) oxidation of unburned hydrocarbons (unburned and partially-burned fuel) to carbon dioxide and water ($2CxHy + (2x+y/2)O_2 \rightarrow 2xCO_2 + yH_2O$). An oxidation catalyst contains materials (generally precious metals such as platinum or palladium) that promote oxidation reactions between oxygen, CO, and VOC to produce carbon dioxide and water vapor. These reactions occur when exhaust at the proper temperature and containing sufficient oxygen passes through the catalyst. Depending on the catalyst formulation, an oxidation catalyst may obtain reductions at temperatures as low as 300 or 400^{o}F, although minimum temperatures in the 600 ^{o}F to 700 ^{o}F range are generally required to achieve maximum reductions. The catalyst will maintain adequate performance at temperatures typically as high as 1350 ^{o}F before problems with physical degradation of the catalyst occur. In the case of rich-burn engines, where the exhaust does not contain enough oxygen to fully oxidize the CO and VOC in the exhaust, air can be injected into the exhaust upstream of the catalyst.

This type of catalytic converter is widely used on lean-burn engines to reduce hydrocarbon and carbon monoxide emissions. The oxidation catalyst is a corrugated base metal substrate with an alumina wash coat loaded with precious metals such as platinum. The alumina is porous allowing for large surface areas to promote oxidation of any unreacted CO and hydrocarbons with oxygen remaining in the exhaust gas. Most oxidation catalysts can be retrofitted onto the engine without disruption of the existing design configuration.

Non-Selective Catalytic Reduction

Non-selective catalytic reduction such as three-way catalysts reduce NOx in addition to oxidizing carbon monoxide and unburned hydrocarbons. The oxidation process is described above under the subheading oxidation catalysts. Reduction of NOx emissions requires an additional step. Platinum catalysis can be used to reduce NOx emissions. The NSCR catalyst promotes the chemical reduction of NOx in the presence of CO and VOC to produce oxygen and nitrogen. The three-way NSCR catalyst also contains materials that promote the oxidation of VOC and CO to form carbon dioxide and water vapor. To control NOx, CO, and VOC simultaneously, NSCR catalysts must operate in a narrow air/fuel ratio band (15.9 to 16.1 for natural gas-fired engines) that is close to stoichiometric. An electronic controller, which includes an oxygen sensor and feedback mechanism, is often necessary to maintain the air/fuel ratio in this narrow band. At this air/fuel ratio, the oxygen concentration in the exhaust is low, while concentrations of VOC and CO are not excessive.

CHAPTER 3

EXISTING SETTING

Introduction

Existing Setting

Air Quality

Hazards and Hazardous Materials

INTRODUCTION

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

The following sections summarize the existing setting for control measure CMB-05 and the existing rules that will be affected by the proposed project (e.g., PAR 1110.2) as well as the regional existing setting for air quality and hazards and hazardous materials which were the only environmental topics identified that may be adversely affected by the proposed project.

The March 2017 Final Program EIR for the 2016 AQMP also contains comprehensive information on existing and projected regional environmental settings for the topic of air quality and hazards and hazardous materials. The March 2017 Final Program EIR for the 2016 AQMP can be obtained by visiting the following website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfProgram EIR.pdf.

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

EXISTING SETTING

In general, Rule 1110.2, was developed to reduce NOx emissions from stationary and portable internal combustion engines with a rating greater than 50 bhp. Rule 1100 was developed to establish the implementation schedule for RECLAIM and former-RECLAIM facilities as they transition to a command-and-control regulatory structure. Control measure CMB-05 in the 2016 AQMP was also developed to identify a series of approaches that can be explored to ensure equivalency with equipment-based command-and-control regulations implementing BARCT, and to generate further NOx emission reductions at RECLAIM facilities. The following summarizes the existing setting for control measure CMB-05 as well as the current versions of Rules 1110.2 and 1100.

CMB-05 - Further NOx Reductions from RECLAIM Assessment

The 2016 AQMP identifies control measures and strategies to bring the region into attainment with the revoked 1997 8-hour NAAQS (standard) (80 ppb) for ozone by 2024; the 2008 8-hour ozone standard (75 ppb) by 2032; the 2012 annual PM2.5 standard (12 $\mu g/m^3$) by 2025; the 2006 24-hour PM2.5 standard (35 $\mu g/m^3$) by 2019; and the revoked 1979 1-hour ozone standard (120 ppb) by 2023. The 2016 AQMP consists of three components: 1) the South Coast AQMD's Stationary, Area, and Mobile Source Control Measures; 2) State and Federal Control Measures provided by the CARB; and 3) Regional Transportation Strategy and Control Measures provided by the Southern California Association of Governments. The 2016 AQMP includes emission inventories and control measures for stationary, area and mobile sources, the most current air quality setting, updated growth projections, new modeling techniques, demonstrations of compliance with state and federal Clean Air Act requirements, and an implementation schedule for adoption of the proposed control strategy. Control measure CMB-05, one of several components in the 2016 AQMP, was developed to identify a series of approaches that can be explored to ensure equivalency with command-and-control regulations implementing BARCT, and to generate five tons per day of further NOx emission reductions at RECLAIM facilities as soon as feasible, and no later than 2025, and to transition to a command-and-control regulatory structure requiring BARCT level controls as soon as practicable. Because many of the RECLAIM program's original advantages appeared to be diminishing, CMB-05 prescribed an orderly sunset of the RECLAIM program to create more regulatory certainty and reduce compliance burdens for RECLAIM facilities, while also achieving more actual and SIP creditable emission reductions.

Rule 1110.2

Rule 1110.2 was adopted in 1990 and applies to stationary and portable internal combustion engines with a rating greater than 50 bhp. Rule 1110.2 was originally developed based on control measure CM-2 from the 1989 AQMP to regulate NOx, CO, and VOC emissions. Rule 1110.2 has been amended 10 times since it was first adopted.

Rule 1100

Rule 1100 was adopted in December 2018 and established the implementation schedule for RECLAIM and former RECLAIM facilities that are transitioning to a command-and-control regulatory structure. Rule 1100 has not been amended since it was first adopted.

AIR QUALITY

It is the responsibility of South Coast AQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, CO, NO2, PM10, PM2.5, SO2, and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM10 and SO2, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and NAAQS for each of these pollutants and their effects on health are summarized in Table 3-1. South Coast AQMD monitors levels of various criteria pollutants at 38 monitoring stations. The 2017 air quality data (the latest data available) from South Coast AQMD's monitoring stations are presented in Table 3-2.

Table 3-1
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	0.12 ppm	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage.
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 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	
Suspended Particulate Matter (PM2.5)	24-hour	No State Standard	35 µg/m^3	(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)	

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

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm (339 μg/m^3)	0.100 ppm (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)	
Sulfur Dioxide (SO_2)	1-Hour	0.25 ppm (655 μg/m^3)	75 ppb (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	0.04 ppm (105 μg/m^3)	No Federal Standard	
Sulfates	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	0.03 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.
	Calendar Quarter	No State Standard	1.5 μg/m^3	
	Rolling 3-Month Average	No State Standard	0.15 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 statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility based standard not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Vinyl Chloride	24-Hour	0.01 ppm (26 μg/m^3)	No Federal Standard	Highly toxic and a known carcinogen that causes a rare cancer of the liver.

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

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

[b] The national ambient air quality standards, other than O3 and those based on annual averages are not to be exceeded more than once a year. The O_3 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.

Table 3-2
2017 Air Quality Data – South Coast Air Quality Management District

CARBON MONOXIDE (CO)[a]				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hour	Max. Conc. in ppm, 8-hour
LOS ANGELES COUNTY				
1	Central Los Angeles	365	1.9	1.6
2	Northwest Coastal Los Angeles County	227*	2.0	1.2
3	Southwest Coastal Los Angeles County	361	2.1	1.6
4	South Coastal Los Angeles County 1	--	--	--
4	South Coastal Los Angeles County 2	--	--	--
4	South Coastal Los Angeles County 3	357	3.9	2.6
4	I-710 Near Road##	--	--	--
6	West San Fernando Valley	365	3.0	2.5
8	West San Gabriel Valley	365	2.2	1.7
9	East San Gabriel Valley 1	365	1.8	0.9
9	East San Gabriel Valley 2	365	0.8	0.6
10	Pomona/Walnut Valley	365	2.0	1.6
11	South San Gabriel Valley	357	2.5	2.2
12	South Central Los Angeles County	365	6.1	4.6
13	Santa Clarita Valley	354	1.3	0.8
ORANGE COUNTY				
16	North Orange County	365	3.8	1.7
17	Central Orange County	365	2.5	2.1
17	I-5 Near Road##	364	8.4	2.6
18	North Coastal Orange County	181*	1.7	1.4
19	Saddleback Valley	340	1.4	0.9
RIVERSIDE COUNTY				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	365	1.9	1.7
23	Metropolitan Riverside County 3	365	2.2	2.0
24	Perris Valley	--	--	--
25	Elsinore Valley	365	1.2	0.8
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1**	365	1.0	0.5
30	Coachella Valley 2**	--	--	--
30	Coachella Valley 3**	--	--	--
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	365	1.9	1.4
33	I-10 Near Road##	359	4.2	1.3
33	CA-60 Near Road##	--	--	--
34	Central San Bernardino Valley 1	365	1.6	1.3
34	Central San Bernardino Valley 2	357	2.5	2.3
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
DISTRICT MAXIMUM			**8.4**	**4.6**
South Coast AIR BASIN			**8.4**	**4.6**

ppm = parts per million
-- Pollutant not monitored
*Incomplete Data
**Salton Sea Air Basin
Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.

[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)
2017 Air Quality Data – South Coast Air Quality Management District

OZONE (O3)										
						No. Days Standard Exceeded				
						Federal			State	
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hr	Max. Conc. in Ppm 8-hr	4th High Conc. ppm 8-hr	Old > 0.124 ppm 1-hr	Current > 0.070 ppm 8-hr*	2008 > 0.075 ppm 8-hr	Current > 0.09 ppm 1-hr	Current > 0.070 ppm 8-hr
LOS ANGELES COUNTY										
1	Central LA	364	0.116	0.086	0.080	0	14	9	6	14
2	Northwest Coastal LA County	228*	0.099	0.077	0.069	0	3	1	1	3
3	Southwest Coastal LA County	364	0.086	0.070	0.064	0	0	0	0	0
4	South Coastal LA County 1	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 2	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 3	362	0.082	0.068	0.062	0	0	0	0	0
4	I-710 Near Road##	--	--	--	--	--	--	--	--	--
6	West San Fernando Valley	365	0.140	0.114	0.095	4	64	44	26	64
8	West San Gabriel Valley	365	0.139	0.100	0.092	2	36	25	18	36
9	East San Gabriel Valley 1	365	0.152	0.114	0.107	7	62	43	38	62
9	East San Gabriel Valley 2	365	0.157	0.121	0.111	9	60	48	45	60
10	Pomona/Walnut Valley	360	0.147	0.114	0.106	5	35	20	18	35
11	South San Gabriel Valley	354	0.118	0.086	0.079	0	9	4	7	9
12	South Central LA County	352	0.092	0.076	0.072	0	5	1	0	5
13	Santa Clarita Valley	365	0.151	0.128	0.104	5	73	53	45	73
ORANGE COUNTY										
16	North Orange County	357	0.113	0.086	0.082	0	12	8	5	12
17	Central Orange County	365	0.090	0.076	0.073	0	4	2	0	4
17	I-5 Near Road##	--	--	--	--	--	--	--	--	--
18	North Coastal Orange County	181*	0.088	0.080	0.073	0	4	1	0	4
19	Saddleback Valley	365	0.103	0.083	0.082	0	25	14	3	25
RIVERSIDE COUNTY										
22	Corona/Norco Area	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	365	0.145	0.118	0.102	2	81	58	47	81
23	Metropolitan Riverside County 3	362	0.144	0.111	0.102	2	64	48	41	64
24	Perris Valley	365	0.120	0.105	0.094	0	80	52	33	80
25	Elsinore Valley	365	0.121	0.098	0.093	0	54	35	23	54
26	Temecula Valley	365	0.104	0.088	0.086	0	47	26	4	47
29	San Gorgonio Pass	365	0.128	0.105	0.101	2	82	64	50	82
30	Coachella Valley 1**	365	0.113	0.097	0.093	0	57	36	18	57
30	Coachella Valley 2**	365	0.107	0.093	0.087	0	44	27	8	44
30	Coachella Valley 3**	--	--	--	--	--	--	--	--	--
SAN BERNARDINO COUNTY										
32	Northwest San Bernardino Valley	365	0.150	0.127	0.112	9	87	72	66	87
33	I-10 Near Road##	--	--	--	--	--	--	--	--	--
33	CA-60 Near Road##	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	361	0.137	0.118	0.095	2	49	38	33	49
34	Central San Bernardino Valley 2	365	0.158	0.136	0.114	14	112	88	81	112
35	East San Bernardino Valley	363	0.156	0.135	0.109	9	114	89	79	114
37	Central San Bernardino Mountains	359	0.146	0.121	0.114	11	110	90	76	110
38	East San Bernardino Mountains	--	--	--	--	--	--	--	--	--
DISTRICT MAXIMUM			**0.158**	**0.136**	**0.114**	**14**	**114**	**63**	**81**	**114**
South Coast AIR BASIN			**0.158**	**0.136**	**0.114**	**26**	**145**	**82**	**109**	**145**

ppm = parts per million
-- = Pollutant not monitored
= Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.
*Incomplete data
**Salton Sea Air Basin

Table 3-2 (Continued)
2017 Air Quality Data – South Coast Air Quality Management District

NITROGEN DIOXIDE (NO2)[b]					
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppb 1-hour	98th Percentile Conc. in ppb 1-hour	Annual Average AAM Conc. ppb
LOS ANGELES COUNTY					
1	Central LA	364	80.6	61.7	20.5
2	Northwest Coastal LA County	229*	55.7	46.2	10.2
3	Southwest Coastal LA County	324	72.2	54.8	9.3
4	South Coastal LA County 1	--	--	--	--
4	South Coastal LA County 2	--	--	--	--
4	South Coastal LA County 3	358	89.5	72.9	17.9
4	I-710 Near Road##	364	115.5	82.5	25.4
6	West San Fernando Valley	337	62.5	54.2	12.9
8	West San Gabriel Valley	361	72.3	59.3	15.3
9	East San Gabriel Valley 1	365	65.6	51.1	15.8
9	East San Gabriel Valley 2	365	55.5	44.5	10.0
10	Pomona/Walnut Valley	360	81.2	62.9	20.5
11	South San Gabriel Valley	357	75.0	63.7	19.6
12	South Central LA County	365	99.1	66.8	16.1
13	Santa Clarita Valley	354	57.6	38.3	10.5
ORANGE COUNTY					
16	North Orange County	365	76.2	61.3	14.5
17	Central Orange County	353	81.2	63.5	14.2
17	I-5 Near Road##	365	86.4	64.1	22.5
18	North Coastal Orange County	181*	45.3	42.2	7.9
19	Saddleback Valley	--	--	--	--
RIVERSIDE COUNTY					
22	Corona/Norco Area	--	--	--	--
23	Metropolitan Riverside County 1	365	63.0	57.9	15.0
23	Metropolitan Riverside County 3	365	65.1	51.9	13.2
24	Perris Valley	--	--	--	--
25	Elsinore Valley	365	49.0	38.3	8.2
26	Temecula Valley	--	--	--	--
29	San Gorgonio Pass	359	56.3	46.0	8.0
30	Coachella Valley 1**	362	42.5	37.7	6.5
30	Coachella Valley 2**	--	--	--	--
30	Coachella Valley 3**	--	--	--	--
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	365	64.1	48.7	15.3
33	I-10 Near Road##	362	86.0	77.3	28.8
33	CA-60 Near Road##	358	93.2	76.3	32.1
34	Central San Bernardino Valley 1	345	69.2	58.4	18.3
34	Central San Bernardino Valley 2	365	65.8	56.5	15.9
35	East San Bernardino Valley	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM			**115.5**	**82.5**	**32.1**
South Coast AIR BASIN			**115.5**	**82.5**	**32.1**

ppb = parts per billion
AAM = Annual Arithmetic Mean
-- Pollutant not monitored
*Incomplete data
**Salton Sea Air Basin
Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.

[b] The NO_2 federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO_2 > 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

Table 3-2 (Continued)
2017 Air Quality Data – South Coast Air Quality Management District

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 LA	356	5.7	2.6
2	Northwest Coastal LA County	--	--	--
3	Southwest Coastal LA County	365	9.5	6.6
4	South Coastal LA County 1	--	--	--
4	South Coastal LA County 2	--	--	--
4	South Coastal LA County 3	361	19.7	14.3
4	I-710 Near Road##	--	--	--
6	West San Fernando Valley	--	--	--
8	West San Gabriel Valley	--	--	--
9	East San Gabriel Valley 1	--	--	--
9	East San Gabriel Valley 2	--	--	--
10	Pomona/Walnut Valley	--	--	--
11	South San Gabriel Valley	--	--	--
12	South Central LA County	--	--	--
13	Santa Clarita Valley	--	--	--
ORANGE COUNTY				
16	North Orange County	--	--	--
17	Central Orange County	--	--	--
17	I-5 Near Road##	--	--	--
18	North Coastal Orange County	181*	1.9	1.7
19	Saddleback Valley	--	--	--
RIVERSIDE COUNTY				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	365	2.5	1.9
23	Metropolitan Riverside County 3	--	--	--
24	Perris Valley	--	--	--
25	Elsinore Valley	--	--	--
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1**	--	--	--
30	Coachella Valley 2**	--	--	--
30	Coachella Valley 3**	--	--	--
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	--	--	--
33	I-10 Near Road##	--	--	--
33	CA-60 Near Road##	--	--	--
34	Central San Bernardino Valley 1	365	3.9	2.1
34	Central San Bernardino Valley 2	--	--	--
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
DISTRICT MAXIMUM			**19.7**	**14.3**
South Coast AIR BASIN			**19.7**	**14.3**

ppb = parts per billion
*Incomplete data
-- = Pollutant not monitored
** Salton Sea Air Basin
= Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.

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

Table 3-2 (Continued)
2017 Air Quality Data – South Coast Air Quality Management District

SUSPENDED PARTICULATE MATTER PM10[d]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m^3, 24-hour	No. (%) Samples Exceeding Standard		Annual Average AAM Conc.[e] µg/m^3
				Federal > 150 µg/m^3, 24-hour	State > 50 µg/m^3, 24-hour	
LOS ANGELES COUNTY						
1	Central LA	340	96	0	41 (12%)	34.4
2	Northwest Coastal LA County	--	--	--	--	--
3	Southwest Coastal LA County	57	46	0	0	19.8
4	South Coastal LA County 1	--	--	--	--	--
4	South Coastal LA County 2	34*	70	0	2 (6%)	27.3
4	South Coastal LA County 3	57	79	0	9 (16%)	33.3
4	I-710 Near Road##	--	--	--	--	--
6	West San Fernando Valley	--	--	--	--	--
8	West San Gabriel Valley	--	--	--	--	--
9	East San Gabriel Valley 1	55	83	0	6 (11%)	31.4
9	East San Gabriel Valley 2	347	140	0	36 (10%)	31.7
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	--	--	--	--	--
12	South Central LA County	--	--	--	--	--
13	Santa Clarita Valley	54*	66	0	2 (4%)	23.6
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	332	128	0	17 (5%)	26.3
17	I-5 Near Road##	--	--	--	--	--
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	57	58	0	1 (2%)	18.4
RIVERSIDE COUNTY						
22	Corona/Norco Area	56	85	0	7 (13%)	31.2
23	Metropolitan Riverside County 1	365	138	0	103 (28%)	41.6
23	Metropolitan Riverside County 3	359	144	0	194 (54%)	54.4
24	Perris Valley	59	75	0	11 (19%)	32.2
25	Elsinore Valley	364	133	0	9 (2%)	22.5
26	Temecula Valley	--	--	--	--	--
29	San Gorgonio Pass	59	97	0	1 (2%)	22.4
30	Coachella Valley 1**	363	93	0	7 (2%)	21.0
30	Coachella Valley 2**	363	128	0	43 (12%)	34.0
30	Coachella Valley 3**	317	150	0	76 (24%)	42.0
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	320	106	0	26 (8%)	31.5
33	I-10 Near Road##	--	--	--	--	--
33	CA-60 Near Road##	--	--	--	--	--
34	Central San Bernardino Valley 1	43*	75	0	7 (16%)	39.3
34	Central San Bernardino Valley 2	356	86	0	35 (10%)	30.9
35	East San Bernardino Valley	59	77	0	2 (3%)	25.8
37	Central San Bernardino Mountains	55	56	0	2 (4%)	17.6
38	East San Bernardino Mountains	--	--	--	--	--
DISTRICT MAXIMUM			**150**	**0**	**194**	**54.4**
South Coast AIR BASIN			**144**	**0**	**207**	**54.4**

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

Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.
\+ High PM10 (≥ 155 µg/m^3) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded in accordance with the U.S. EPA Exceptional Event Rule.

[d] PM10 statistics listed above are based on combined Federal Reference Method (FRM) and Federal Equivalent Method (FEM) data.

[e] State annual average (AAM) PM10 standard is > 20 µg/m^3. Federal annual PM10 standard (AAM > 50 µg/m^3) was revoked in 2006.

Table 3-2 (Continued)
2017 Air Quality Data – South Coast Air Quality Management District

SUSPENDED PARTICULATE MATTER PM2.5 [f]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m^3, 24-hour	98th Percentile Conc. in µg/m^3 24-hr	No. (%) Samples Exceeding Federal Std > 35 µg/m^3, 24-hour	Annual Average AAM Conc.[g)] µg/m^3
LOS ANGELES COUNTY						
1	Central LA	358	49.20	27.80	5 (1.4%)	11.94
2	Northwest Coastal LA County	--	--	--	--	--
3	Southwest Coastal LA County	--	--	--	--	--
4	South Coastal LA County 1	348	55.30	32.30	4 (1.1%)	10.90
4	South Coastal LA County 2	356	56.30	31.10	5 (1.4%)	11.02
4	South Coastal LA County 3	--	--	--	--	--
4	I-710 Near Road##	365	85.40	35.60	8 (2.2%)	12.90
6	West San Fernando Valley	109	35.20	20.70	0	9.70
8	West San Gabriel Valley	121	22.80	18.80	0	9.68
9	East San Gabriel Valley 1	115	24.90	21.20	0	10.42
9	East San Gabriel Valley 2	--	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	119	49.50	29.50	1 (0.8%)	12.23
12	South Central LA County	119	66.70	41.30	4 (3.4%)	12.92
13	Santa Clarita Valley	--	--	--	--	--
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	305*	53.90	31.20	6 (2%)	11.39
17	I-5 Near Road##	--	--	--	--	--
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	113	19.50	15.00	0	8.11
RIVERSIDE COUNTY						
22	Corona/Norco Area	--	--	--	--	--
23	Metropolitan Riverside County 1	353	50.30	29.50	6 (1.7%)	12.18
23	Metropolitan Riverside County 3	358	62.20	39.80	9 (2.5%)	13.40
24	Perris Valley	--	--	--	--	--
25	Elsinore Valley	--	--	--	--	--
26	Temecula Valley	--	--	--	--	--
29	San Gorgonio Pass	--	--	--	--	--
30	Coachella Valley 1**	114	14.50	12.80	0	6.05
30	Coachella Valley 2**	110	18.80	14.70	0	8.10
30	Coachella Valley 3**	--	--	--	--	--
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	--	--	--	--	--
33	I-10 Near Road##	--	--	--	--	--
33	CA-60 Near Road##	359	44.80	34.50	7 (1.9%)	14.43
34	Central San Bernardino Valley 1	120	39.20	26.50	1 (0.8%)	12.04
34	Central San Bernardino Valley 2	116	38.20	25.60	1 (0.9%)	11.43
35	East San Bernardino Valley	--	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--	--
38	East San Bernardino Mountains	49	23.50	23.50	0	5.85
DISTRICT MAXIMUM			**85.40**	**41.3**	**9**	**14.43**
South Coast AIR BASIN			**85.40**	**41.3**	**15**	**14.43**

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

Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710
+ High PM10 (≥ 155 µg/m^3) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded in accordance with the U.S. EPA Exceptional Event Rule.

f PM2.5 statistics listed above are for the FRM data only. FEM PM2.5 continuous monitoring instruments were operated at some of the above locations for real-time alerts and forecasting only.

g Both Federal and State standards are annual average (AAM) > 12.0 µg/m^3.

Table 3-2 (Concluded)
2016 Air Quality Data – South Coast Air Quality Management District

		LEAD[h]		SULFATES (SOx)[i]	
Source Receptor Area No.	Location of Air Monitoring Station	Max. Monthly Average Conc. m) $\mu g/m^3$	Max. 3-Month Rolling Average m) $\mu g/m^3$	No. Days of Data	Max. Conc. $\mu g/m^3$, 24-hour
LOS ANGELES COUNTY					
1	Central LA	0.017	0.01	58	5.1
2	Northwest Coastal LA County	--	--	--	--
3	Southwest Coastal LA County	0.005	0.00	57	5.2
4	South Coastal LA County 1	--	--	--	--
4	South Coastal LA County 2	0.010	0.01	34	3.1
4	South Coastal LA County 3	--	--	45	3.8
4	I-710 Near Road##	--	--	--	--
6	West San Fernando Valley	--	--	--	--
8	West San Gabriel Valley	--	--	--	--
9	East San Gabriel Valley 1	0.018	0.01	55	3.9
9	East San Gabriel Valley 2	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--
11	South San Gabriel Valley	0.010	0.01	--	--
12	South Central LA County	0.016	0.01	--	--
13	Santa Clarita Valley	--	--	53	4.5
ORANGE COUNTY					
16	North Orange County	--	--	--	--
17	Central Orange County	--	--	58	3.3
17	I-5 Near Road##	--	--	--	--
18	North Coastal Orange County	--	--	--	--
19	Saddleback Valley	--	--	57	3.0
RIVERSIDE COUNTY					
22	Corona/Norco Area	--	--	--	--
23	Metropolitan Riverside County 1	0.008	0.01	119	4.0
23	Metropolitan Riverside County 3	--	--	58	3.3
24	Perris Valley	--	--	59	3.0
25	Elsinore Valley	--	--	--	--
26	Temecula Valley	--	--	--	--
29	San Gorgonio Pass	--	--	59	2.8
30	Coachella Valley 1**	--	--	56	2.8
30	Coachella Valley 2**	--	--	118	3.4
30	Coachella Valley 3**	--	--	--	--
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	0.004	0.00	--	--
33	I-10 Near Road##	--	--	--	--
33	CA-60 Near Road##	--	--	--	--
34	Central San Bernardino Valley 1	--	--	43	3.7
34	Central San Bernardino Valley 2	0.010	0.01	59	3.6
35	East San Bernardino Valley	--	--	59	3.2
37	Central San Bernardino Mountains	--	--	55	2.4
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM		**0.018**	**0.01**		**5.2**
South Coast AIR BASIN		**0.018**	**0.01**		**5.2**

$\mu g/m^3$ = micrograms per cubic meter of air
-- Pollutant not monitored
* Incomplete Data
** Salton Sea Air Basin
Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.

+ High PM10 ($\geq$ 155 $\mu g/m^3$) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded in accordance with the U.S. EPA Exceptional Event Rule.
++ Higher lead concentrations were recorded at near-source monitoring sites immediately downwind of stationary lead sources. Maximum monthly and 3-month rolling averages recorded were 0.88 μ/m^3 and 0.06 μ/m^3.

h Federal lead standard is 3-months rolling average > 0.15 $\mu g/m^3$; state standard is monthly average $\geq$ 1.5 $\mu g/m^3$. Lead standards were not exceeded.

i State sulfate standard is 24-hour $\geq$ 25 $\mu g/m^3$. There is no federal standard for sulfate. Sulfate data is not available at this time.

Carbon Monoxide

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

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

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

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

CO concentrations were measured at 25 locations in the Basin and neighboring Salton Sea Air Basin areas in 2017. CO concentrations did not exceed the standards in 2017. The highest 1-hour average CO concentration recorded (8.4 ppm at the I-5 near-road monitoring station in LA County) was 24 percent of the federal 1-hour CO standard of 35 ppm and 42 percent of the state 1-hour standard of 20 ppm. The highest 8-hour average CO concentration recorded (4.6 ppm in the South Central Los Angeles County area) was 51 percent of the federal and state 8-hour CO standard of 9.0 ppm.

In 2004, South Coast AQMD formally requested the U.S. EPA to re-designate the Basin from non-attainment to attainment with the CO NAAQS. On March 24, 2007, U.S. EPA published in the Federal Register 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 U.S. EPA. On May 11, 2007, U.S. EPA published in the Federal Register its final decision to approve South Coast AQMD's request for re-designation from non-attainment to attainment for CO, effective June 11, 2007.

On August 12, 2011, U.S. EPA issued a decision to retain the existing NAAQS for CO, determining that those standards provided the required level of public health protection. However, U.S. EPA added a monitoring requirement for near-road CO monitors in urban areas with population of one million or more, utilizing stations that would be implemented to meet the 2010 NO2 near-road monitoring requirements. The two new CO monitors are at the I-5 near-road site, located in Orange County near Anaheim, and the I-10 near-road site, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

Ozone

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

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

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

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

In 2017, South Coast AQMD regularly monitored ozone concentrations at 29 locations in the Basin and the Coachella Valley portion of the Salton Sea Air Basin. Maximum ozone concentrations (fourth highest concentration ppm 8-hour) for all areas monitored were below the stage 1 episode level (0.20 ppm) and below the health advisory level (0.15 ppm) (see Table 3-2). All counties in the Basin, as well as the Coachella Valley, exceeded the level of the new 2015 8-hour ozone NAAQS (0.070 ppm), the former 2008 8-hour ozone NAAQS (0.075 ppm), and/or the 1997 8-hour ozone NAAQS (0.08 ppm) in 2017. While not all stations had days exceeding the previous 8-hour standards, all monitoring stations except two (Southwest Coastal LA County and South Coastal LA County 3) had at least one day over the 2015 federal ozone standard (70 ppb).

In 2017, the maximum ozone concentrations in the Basin continued to exceed federal standards by wide margins. Maximum 1-hour and 8-hour average ozone concentrations were 0.158 ppm and 0.136 ppm, respectively (the maximum 1-hour and 8-hour average was recorded in the Central San Bernardino Mountain area). The maximum 8-hour concentration of 0.136 ppm was 194 percent of the new federal standard (0.070 ppm). The maximum 1-hour concentration was 176 percent of the 1-hour state ozone standard of 0.09 ppm. The 8-hour average concentration was 194 percent of the 8-hour state ozone standard of 0.070 ppm.

Nitrogen Dioxide

NO_2 is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from the nitrogen (N_2) and oxygen (O_2) 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 NO_2. NO_2 is responsible for the brownish tinge of polluted air. The two gases, NO and NO_2, are referred to collectively as NOx. In the presence of sunlight, NO_2 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 (HNO_3) 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 NO_2 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 NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups. More recent studies have found associations between NO_2 exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits.

In animals, exposure to levels of NO_2 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 NO_2.

In 2017, nitrogen dioxide concentrations were monitored at 27 locations. No area of the Basin or SSAB exceeded the federal for NO_2. However, the state annual average at the CA-60 near-road location was 0.032 ppm in 2017 which exceeded the state annual standard of 0.030 ppm. The Basin has not exceeded the federal standard for NO_2 (0.0534 ppm) since 1991, when the Los Angeles County portion of the Basin recorded the last exceedance of the standard in any county within the United States. The current 1-hour average NO_2 NAAQS (100 ppb) was last exceeded on two days in 2014 in the South Coastal Los Angeles County area at the Long Beach-Hudson air monitoring station. However, the 98th percentile form of the standard was not exceeded, and the 2013-2015 design value is not in violation of the NAAQS. The higher relative concentrations in the Los Angeles area are indicative of the concentrated emission sources, especially heavy-duty vehicles. NOx emission reductions continue to be necessary because it is a precursor to both ozone and PM (PM2.5 and PM10) concentrations.

With the revised NO_2 federal standard in 2010, near-road NO_2 measurements were required to be phased in for larger cities. The four near-road monitoring stations are: 1) I-5 near-road, located in Orange County near Anaheim; 2) I-710 near-road, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; 3) State Route 60 (CA-60) near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland; and 4) I-10 near-road, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

The longest operating near-road station in the Basin, adjacent to I-5 in Orange County, has not exceeded the level of the 1-hour NO_2 NAAQS (100 ppb) since the measurements began on January 1, 2014. The peak 1-hour NO_2 concentration at that site in 2014 was 78.8 ppb and the peak concentration for 2015 was 70.2 ppb. This can be compared to the annual peak values measured at the nearest ambient monitoring station in Central Orange County (Anaheim station), where the 2014 and 2015 peaks were 75.8 and 59.1, respectively.

Sulfur Dioxide

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

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

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

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

No exceedances of federal or state standards for sulfur dioxide occurred in 2017 at any of the six locations monitored the Basin. The maximum 1-hour SO2 concentration was 19.7 ppb, as recorded in the South Coastal Los Angeles County area. The 99th percentile of 1-hour SO2 concentration was 14.3 ppb, as recorded in the South Coastal Los Angeles County 3 area. Though SO2 concentrations remain well below the standards, SO2 is a precursor to sulfate, which is a component of fine particulate matter, PM10, and PM2.5. Historical measurements showed concentrations to be well below standards and monitoring has been discontinued

Particulate Matter (PM10 and PM2.5)

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

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

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

South Coast AQMD monitored PM10 concentrations at 23 locations in 2017. The federal 24-hour PM10 standard (150 $\mu g/m^3$) was not exceeded in 2017. The Basin has remained in attainment of the PM10 NAAQS since 2006. The maximum three-year average 24-hour PM10 concentration of 150 $\mu g/m^3$ was recorded in the Coachella Valley area and was 100 percent of the federal standard and 300 percent of the much more stringent state 24-hour PM10 standard (50 $\mu g/m^3$). The state 24-hour PM10 standard was exceeded at several of the monitoring stations. The maximum annual average PM10 concentration of 54.4 $\mu g/m^3$ was recorded in Metropolitan Riverside County. The federal annual PM10 standard has been revoked. The much more stringent state annual PM10 standard (20 $\mu g/m^3$) was exceeded in most stations in each county in the Basin and in the Coachella Valley.

In 2017, PM2.5 concentrations were monitored at 19 locations throughout the Basin. U.S. EPA revised the federal 24-hour PM2.5 standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$, effective December 17, 2006. In 2017, the maximum PM2.5 concentrations in the Basin exceeded the new federal 24-hour PM2.5 standard in 13 out of 19 locations. The maximum 24-hour PM2.5 concentration of 85.4 $\mu g/m^3$ was recorded at the I-710 near-road monitoring station in LA County. The 98th percentile 24-hour PM2.5 concentration of 41.3 $\mu g/m^3$ was recorded at the CA-60 near-road monitoring station in San Bernardino County. The maximum annual average concentration of 14.43 $\mu g/m^3$ was recorded in San Bernardino County, which represents 96 percent of the 2006 federal standard of 15 $\mu g/m^3$.

On December 14, 2012, U.S. EPA strengthened the annual NAAQS for PM2.5 to 12 $\mu g/m^3$ and, as part of the revisions, a requirement was added to monitor near the most heavily trafficked roadways in large urban areas. Particle pollution is expected to be higher along these roadways as a result of direct emissions from cars and heavy-duty diesel trucks and buses. South Coast AQMD has installed the two required PM2.5 monitors by January 1, 2015, at locations selected based upon the existing near-roadway NO2 sites that were ranked higher for heavy-duty diesel traffic. The locations are: 1) I-710, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; and 2) State Route 60 (CA-60) near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland. These near-road sites measure PM2.5 daily with FRM filter-based measurements.

Lead

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). Lead in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric lead in the Basin over the past three decades. In fact, there were no violations of the lead standards at South Coast AQMD's regular air monitoring stations from 1982 to 2007, as a result of removal of lead from gasoline.

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

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

On November 12, 2008, the U.S. EPA published a NAAQS for lead, which became effective January 12, 2010. At that time, 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 U.S. EPA 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[12]."

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. South Coast AQMD 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 U.S. EPA on June 20, 2012. The plan outlined steps that will bring the area into attainment with the standard. As of February 11, 2014, the U.S. EPA announced in the Federal Register (FR) final approval of the lead air quality plan, effective 30 days after publication (e.g., March 12, 2014).

In May 2014, the U.S. EPA 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 U.S. EPA announced that the ambient lead concentration standard of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period would remain unchanged.

To continue to pursue reducing lead emissions from large lead-acid battery recycling facilities, in March 2015, South Coast AQMD 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.

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

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 South Coast AQMD developed new Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities, which was adopted by the Governing Board on October 2, 2015.

In December 2017, South Coast AQMD Rule 1420 – Emissions Standard for Lead was amended to reduce lead emissions from facilities not covered under Rule 1420.1 and 1420.2. The ambient lead concentration limit was updated to reflect the current standard of 0.150 $\mu g/m^3$ and 0.100 $\mu g/m^3$ effective on January 1, 2021. The rule was also amended to include requirements for air pollution control systems and additional housekeeping and maintenance requirements, similar to Rules 1420.1 and 1420.2.

The current lead concentrations in Los Angeles County are now below the NAAQS. Further, the state standards for lead were not exceeded in any area of the South Coast AQMD in 2017. The maximum quarterly average lead concentration (0.01 $\mu g/m^3$ at several monitoring) was seven percent of the federal quarterly average lead standard (0.15 $\mu g/m^3$). The maximum monthly average lead concentration (0.018 $\mu g/m^3$ in East San Gabriel Valley 1) was one percent of the state monthly average lead standard. As a result of the 2012-2014 design value below the NAAQS, South Coast AQMD will be requesting that U.S. EPA re-designate the nonattainment area as attaining the federal lead standard.

Stringent South Coast AQMD rules governing lead-producing sources will help to ensure that there are no future violations of the federal standard. Furthermore, one business that had been responsible for the highest measured lead concentrations in Los Angeles County has closed and is in the process of demolition and site clean-up.

Sulfates

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

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

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

In 2017, the state 24-hour sulfate standard (25 $\mu g/m^3$) was not exceeded in any of the 19 monitoring locations in the Basin. The maximum 24-hour sulfate concentration was 5.2 ppb, as recorded in Southwest Coastal LA County. There are no federal sulfate standards.

Vinyl Chloride

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

In the past, vinyl chloride emissions have been associated primarily with sources such as landfills. Risks from exposure to vinyl chloride are considered to be localized impacts rather than regional impacts. Because landfills in the South Coast AQMD are subject to Rule 1150.1 – Control of Gaseous Emissions from Municipal Solid Waste Landfills, which contain stringent requirements for landfill gas collection and control, potential vinyl chloride emissions are expected to be below the level of detection. Therefore, South Coast AQMD does not monitor for vinyl chloride at its monitoring stations.

Volatile Organic Compounds

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

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

Non-Criteria Pollutants

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

These rules originated through state directives, Clean Air Act (CAA) requirements, or the South Coast AQMD rulemaking process.

In addition to promulgating non-criteria pollutant rules, South Coast AQMD has been evaluating control measures in the 2016 Air Quality Management Plan (AQMP) 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 compounds that contribute to TACs.

Air Quality – Toxic Air Contaminants (TACs)

Federal

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

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

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

State

The California air toxics program was based on the CAA and the original federal list of hazardous air pollutants. The state program was established in 1983 under the Toxic Air Contaminant Identification and Control Act, Assembly Bill (AB) 1807, Tanner. Under the state program, 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 ATCMs are adopted to control emissions from specific sources. CARB has adopted a regulation designating all 188 federal hazardous air pollutants (HAPs) as TACs.

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

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

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

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

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

OEHHA Health Risk Assessment Guidelines: In 2003, OEHHA developed and approved its Health Risk Assessment Guidance document (2003 OEHHA Guidelines) and prepared a series of Technical Support Documents, reviewed and approved by the Scientific Review Panel (SRP), that provided new scientific information showing that early-life exposures to air toxics contribute to an increased estimated lifetime risk of developing cancer and other adverse health effects, compared to exposures that occur in adulthood. As a result, OEHHA developed the Revised OEHHA Guidelines in March 2015, which incorporated this new scientific information. The new method utilizes higher estimates of cancer potency during early life exposures. There are also differences in the assumptions on breathing rates and length of residential exposures.

South Coast AQMD

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

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

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

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

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

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

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

Reduction Plan, especially for goods movement related sources, while the U.S. EPA continued to implement their air toxic programs applicable to stationary sources.

Clean Communities Plan: On November 5, 2010, the South Coast AQMD Governing Board approved the 2010 Clean Communities Plan (CCP). The CCP was an update to the 2000 ATCP and the 2004 Addendum. The objective of the 2010 CCP was to reduce exposure to air toxics and air-related nuisances throughout the South Coast AQMD, 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 South Coast AQMD staff works with community stakeholders to identify and develop solutions community-specific to air quality issues in two communities: 1) the City of San Bernardino; and 2) Boyle Heights and surrounding areas.

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

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

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

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

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

CEQA Intergovernmental Review Program: South Coast AQMD 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:

- South Coast AQMD's Mobile Source Committee approved the "Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions" (August 2002). This document provides guidance for analyzing cancer risks from DPM from truck idling and movement (e.g., truck stops, warehouse and distribution centers, or transit centers), ship hoteling at ports, and train idling.

- CalEPA and CARB's "Air Quality and Land Use Handbook: A Community Health Perspective" (April 2005), provides recommended siting distances for incompatible land uses.
- Western Riverside Council of Governments' Regional Air Quality Task Force developed a policy document titled "Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities" (September 2005). This document provides guidance to local government on preventive measures to reduce neighborhood exposure to TACs from warehousing facilities.

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

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

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

Carl Moyer Program: Another program that targets diesel emission reductions is the Carl Moyer Program, which provides grants for projects that achieve early or extra emission reductions beyond what is required by regulations. Examples of eligible projects include cleaner on-road, off-road, marine, locomotive, and stationary agricultural pump engines. Other endeavors of South Coast

AQMD's Technology Advancement Office help to reduce DPM emissions through co-funding research and demonstration projects of clean technologies, such as low-emitting locomotives.

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

Multiple Air Toxics Exposure Studies

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

Multiple Air Toxics Exposure Study II (MATES II): At its October 10, 1997 meeting, the South Coast AQMD Governing Board directed staff to conduct a follow up to the MATES report to quantify the magnitude of population exposure risk from existing sources of selected air toxic contaminants at that time. MATES II included a monitoring program of 40 known air toxic compounds, an updated emissions inventory of 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 DPM emissions; about 20 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde); about 10 percent of Basin-wide health risk was attributed to stationary sources (which include industrial sources and other certain specifically identified commercial businesses such as dry cleaners and print shops.)

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

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

Health Effects

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

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

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.

CO_2 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 CO_2 include burning coal, oil, gasoline, natural gas, and wood.

CH_4 is a flammable gas and is the main component of natural gas. N_2O, 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 N_2O. 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. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 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 U.S. EPA 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 U.S. EPA 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 U.S. EPA 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[13], 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, U.S. EPA 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

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

limitations (PALs) for GHG emissions, which will improve the administration of the GHG PSD permitting programs. Recently, the U.S. Supreme Court held that U.S. EPA was limited to Step 1.

GHG Reporting Program: U.S. EPA 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 U.S. EPA. 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 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 emission reduction plan by January 1, 2009, indicating how the GHG emission 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 U.S. EPA 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 U.S. EPA to implement GHG standards for passenger vehicles was made in December 2005 and subsequently denied by the U.S. EPA in March 2008. The U.S. EPA 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.

South Coast AQMD

The South Coast AQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the South Coast AQMD to consider global impacts in rulemaking and in drafting revisions to the AQMP. In March 1992, the South Coast AQMD 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 South Coast AQMD has established a policy, adopted by the South Coast AQMD 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 South Coast AQMD 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 South Coast AQMD 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. South Coast AQMD 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 South Coast AQMD Staff Comments on Legislation Relating to Climate Change' approved at the South Coast AQMD 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 South Coast AQMD lead agency documents and in comments when South Coast AQMD is a responsible agency;
6. Revise the South Coast AQMD'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 South Coast AQMD Governing Board on how the agency can reduce its own carbon footprint, including drafting a Green Building Policy with recommendations regarding South Coast AQMD 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 South Coast AQMD 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 South Coast AQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the South Coast AQMD is lead agency. South Coast AQMD'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, South Coast AQMD staff plans to report back to the South Coast AQMD Governing Board regarding any recommended changes or additions to the South Coast AQMD's interim threshold.

Table 3-3 presents the GHG emission inventory by major source categories in calendar year 2008. 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). These GHG emissions are reported in MMTCO2e. Mobile sources generate 59.4 percent of the equipment, airport equipment, 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).

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

Source Category	Emissions						
	CO2	N2O	CH4	CO2	N2O	CH4	CO2e
	(TPD)			(TPY)			(MMT)
Fuel Combustion							
Electric Utilities	34,303	0.08	0.71	12,520,562	29.0	258	11.4
Cogeneration	872	0.00	0.02	318,340	0.60	6.00	0.29
Oil and Gas Production (Combustion)	2,908	0.01	0.08	1,061,470	4.71	29.5	0.96
Petroleum Refining (Combustion)	44,654	0.06	0.57	16,298,766	20.7	207	14.8
Manufacturing and Industrial	22,182	0.06	0.48	8,096,396	20.9	174	7.35
Food and Agricultural Processing	927	0.00	0.02	338,516	0.84	7.16	0.31
Service and Commercial	21,889	0.08	0.59	7,989,416	30.8	215	7.26
Other	2,241	0.02	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**
Petroleum Production and Marketing							
Oil and Gas Production	92.1	0.00	0.92	33,605	0.06	336	0.04
Petroleum Refining	770	0.00	1.65	280,932	0.36	603	0.27
Petroleum Marketing			83.8	0	0.00	30,598	0.58
Other			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
2008 GHG Emissions for the South Coast Air Basin (concluded)

Source Category	**Emissions**						
	CO2	**N2O**	**CH4**	**CO2**	**N2O**	**CH4**	**CO2e**
	(TPD)			**(TPY)**			**(MMT)**
Other Source Categories							
Total Waste Disposal[(b)]	3,772	0.04	508	1,376,870	14.9	185,278	4.78
Total Cleaning and Surface Coatings[(c)]	2,648	0.00	0.33	966,628	1.22	122	0.88
Total Industrial Processes[(d)]	279	0.00	1.49	101,832	0.19	543	0.10
Total Solvent Evaporation[(e)]	0.00	0.00	0.07	0.00	0.00	24.20	0.00
Total Miscellaneous Processes[(f)]	38,850	0.12	27.9	14,180,326	45.3	10,179	13.1
Total On-Road Motor Vehicles[(g)]	217,480	6.11	8.26	79,380,188	155	187	72.7
Total Other Mobile Sources[(h)]	57,572	1.83	8.95	21,013,816	668	3,268	19.3
Total Other Source Categories	**320,601**	**8.10**	**555**	**117,019,660**	**885**	**199,601**	**111**
Total 2008 Baseline GHG Emissions for Basin	**451,440**	**8.42**	**644**	**164,775,719**	**1,001**	**232,094**	**155**

Source: (South Coast AQMD, 2012)

(a) MMT = million metric tons.
(b) Waste Disposal includes sewage treatment, landfills, incineration, and other waste disposal.
(c) Cleaning and Surface Coatings includes laundering, degreasing, coatings and related processes, printing, adhesives and sealants, and other cleaning and surface coatings.
(d) Industrial Processes include chemical, food and agriculture, mineral processes, metal processes, wood and paper, glass and related products, electronic, and other industrial processes.
(e) Solvent Evaporation includes consumer products, architectural coating and related solvents, pesticides and fertilizers, and asphalt paving and roofing.
(f) Miscellaneous Processes include residential fuel combustion, farming operations, construction and demolition, paved road dust, unpaved road dust, fugitive windblown dust, fires, waste burning and disposal, utility equipment, cooking, and other miscellaneous processes.
(g) On-Road Motor Vehicles include trucks (all sizes), motorcycles, buses (all types), and motorhomes.
(h) Other Mobile Sources include aircraft; trains; ships; commercial boats, construction, airport, and oil and gas drilling equipment.

Table 3-4 presents the GHG emission inventory by fuel type in calendar year 2012 for the Basin. These GHG emissions are reported in metric tons of CO2. Gasoline generates 53 percent of the GHG emissions from fuel combustion. Natural gas generates 31 percent of the GHG emissions from fuel combustion. The remaining 20 percent of the total Basin GHG emissions from fuel combustion are from diesel, jet fuel, LPG, and fuel oil (2016 AQMP, Chapter 10).

Table 3-4
2012 GHG Emissions from Fuel Use in the Basin

Fuel Type	Consumption (Gallons)	Gas Supply (Therms)	CO2 Emissions (MT)
Gasoline	7,647,883,106	-	67,148,414
On-Road	7,108,714,450		62,414,512.87
Off-Road	539,168,656		4,733,900.80
Diesel	1,423,889,933	-	14,537,916
On-Road	872,963,200		8,912,954.27
Commercial Harborcraft	21,912,232		223,723.89
Trains	33,129,134		338,248.46
Off-Road	495,885,367		5,062,989.59
Jet Fuel	508,249,568.11		4,955,433.29
Fuel Oil - OGV (Residual Fuel Oil 5/6)	23,960,515.63		282,734.08
Natural Gas	8,831,724,016	7,359,770,013	39,389,489
Residential	2,445,612,164	2,038,010,137	10,907,430.25
Commercial	990,525,700	825,438,083	4,417,744.62
Industrial	1,592,974,552	1,327,478,793	7,104,666.50
NGV	132,285,600	110,238,000	589,993.78
EG	3,670,326,000	3,058,605,000	16,369,653.96
LPG	182,009,738		1,053,836
Residential	115,838,116		670,702.69
Commercial	43,807,549		253,645.71
Industrial	22,364,073		129,487.98
Total	**18,671,716,877**		**127,367,823**

Source: 2016 AQMP

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 U.S. EPA 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 U.S. EPA 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 United States, 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.

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.

South Coast AQMD

The South Coast AQMD 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 South Coast AQMD 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.

South Coast AQMD Rule 1122 – Solvent Degreasers: 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.

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

South Coast AQMD 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.

South Coast AQMD 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.

South Coast AQMD 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.

HAZARDOUS AND HAZARDOUS MATERIALS

Hazard concerns are related to the potential for fires, explosions or the release of hazardous materials/substances in the event of an accident or upset conditions. The potential for hazards exist in the production, use, storage, and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the Basin in large quantities via all modes of transportation including rail, highway, water, air, and pipeline.

PARs 1110.2 and 1100 are intended to improve overall air quality; however, it may have direct or indirect hazards associated with the implementation. In order to achieve the desired reduction of NOx emissions from PAR 1110.2, some internal combustion engines may require the installation of air pollution control equipment such as SCR systems which utilize ammonia. As such, implementation of PAR 1110.2 may affect the use, storage, and transport of hazards and hazardous materials for any facility that installs SCR technology for reducing NOx emissions. New (or modifications to existing) air pollution control equipment and related components are expected to be installed at some of the affected facilities such that their operations may increase the quantity of hazardous materials generated by the control equipment and may increase the quantity of ammonia used. It is anticipated some facilities will need to install SCR technology to meet NOx emission limits and in doing so, may result in the overall increase in the amount of ammonia delivered, stored and injected. Installation of SCR equipment may also result in potential ammonia slip emissions, an increase the amount of fresh catalyst needed, and an increase spent catalyst replaced over time.

Hazardous Materials Regulations

Incidents of harm to human health and the environment associated with hazardous materials have created a public awareness of the potential for adverse effects from careless handling and/or use of these substances. As a result, a number of federal, state, and local laws have been enacted to regulate the use, storage, transportation, and management of hazardous materials and wastes. The most relevant hazardous materials laws and regulations are summarized in the following subsection of this section.

A number of properties may cause a substance to be hazardous, including toxicity, ignitability, corrosivity, and reactivity. The term "hazardous material" is defined in different ways for different regulatory programs. For the purposes of this SEA, the term "hazardous materials" refers to both hazardous materials and hazardous wastes. A hazardous material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency or if it has characteristics defined as hazardous by such an agency. Health and Safety Code section 25501(k) defines hazardous material as follows:

> "Hazardous material" means any material that because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include but are not limited to hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Examples of the types of materials and wastes considered hazardous are hazardous chemicals (e.g., toxic, ignitable, corrosive, and reactive materials), radioactive materials, and medical (infectious) waste. The characteristics of toxicity, ignitability, corrosivity, and reactivity are defined in Title 22, California Code of Regulations (CCR), Section 66261.20-66261.24 and are summarized below:

> **Toxic Substances:** Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels. (The level depends on the substances involved and are chemical-specific.) Carcinogens (substances that can cause cancer) are a special class of toxic substances. Examples of toxic substances include benzene (a component of gasoline and a suspected carcinogen) and methylene chloride (a common laboratory solvent and a suspected carcinogen).
>
> **Ignitable Substances:** Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.
>
> **Corrosive Materials:** Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sodium hydroxide (lye) or sulfuric acid (battery acid).
>
> **Reactive Materials:** Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

Federal Regulations

The U.S. EPA is the primary federal agency charged with protecting human health and with safeguarding the natural environment from pollution into air, water, and land. The U.S. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The U.S. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and Indian tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws that pertain to hazardous materials, for the U.S. EPA to implement as well as to other agencies at the federal, state and local level, as described in the following subsections.

Toxics Substances Control Act: The Toxic Substances Control Act (TSCA) was enacted by Congress in 1976 (see 15 U.S.C. §2601 et seq.) and gave the U.S. EPA the authority to protect the public from unreasonable risk of injury to health or the environment by regulating the manufacture, sale, and use of chemicals currently produced or imported into the United States. The TSCA, however, does not address wastes produced as byproducts of manufacturing. The types of chemicals regulated by the act fall into two categories: existing and new. New chemicals are defined as "any chemical substance which is not included in the chemical substance list compiled and published under [TSCA] section 8(b)." This list included all of chemical substances manufactured or imported into the United States prior to December 1979. Existing chemicals include any chemical currently listed under section 8 (b). The distinction between existing and new chemicals is necessary as the act regulates each category of chemicals in different ways. The U.S. EPA repeatedly screens both new and existing chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The U.S. EPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

Emergency Planning and Community Right-to-Know Act: The Emergency Planning and Community Right-to-Know Act (EPCRA) is a federal law adopted by Congress in 1986 that is designed to help communities plan for emergencies involving hazardous substances. EPCRA establishes requirements for federal, state and local governments, Indian tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. There are four major provisions of EPCRA:

1. Emergency Planning (§§301 – 303) requires local governments to prepare chemical emergency response plans, and to review plans at least annually. These sections also require state governments to oversee and coordinate local planning efforts. Facilities that maintain Extremely Hazardous Substances (EHS) on-site (see 40 Code of Federal Regulations (CFR) Part 355 for the list of EHS chemicals) in quantities greater than corresponding "Threshold Planning Quantities" must cooperate in the preparation of the emergency plan.

2. Emergency Release Notification (§304) requires facilities to immediately report accidental releases of EHS chemicals and hazardous substances in quantities greater than corresponding Reportable Quantities (RQs) as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to state and local officials. Information about accidental chemical releases must be made available to the public.

3. Hazardous Chemical Storage Reporting (§§311 – 312) requires facilities that manufacture, process, or store designated hazardous chemicals to make Safety Data Sheets (SDSs, formerly referred to as material safety data sheets or MSDSs) describing the properties and health effects of these chemicals available to state and local officials and local fire departments. These sections also require facilities to report to state and local officials and local fire departments, inventories of all on-site chemicals for which SDSs exist. Lastly, information about chemical inventories at facilities and SDSs must be available to the public.

4. Toxic Chemical Release Inventory (§313) requires facilities to annually complete and submit a Toxic Chemical Release Inventory Form for each Toxic Release Inventory (TRI) chemical that are manufactured or otherwise used above the applicable threshold quantities.

Implementation of EPCRA has been delegated to the State of California. The California Emergency Management Agency requires facilities to develop a Hazardous Materials Business Plan if they handle hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Hazardous Materials Business Plan is provided to state and local emergency response agencies and includes inventories of hazardous materials, an emergency plan, and implements a training program for employees.

Hazardous Materials Transportation Act: The Hazardous Material Transportation Act (HMTA), adopted in 1975 (see 49 U.S.C. §§5101 – 5127), gave the Secretary of Transportation the regulatory and enforcement authority to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce. The United States Department of Transportation (U.S. DOT) (see 49 CFR Parts 171-180) oversees the movement of hazardous materials at the federal level. The HMTA requires that carriers report accidental releases of hazardous materials to U.S. DOT at the earliest practical moment. Other incidents that must be reported include deaths, injuries requiring hospitalization, and property damage exceeding $50,000. The hazardous material regulations also contain emergency response provisions which include incident reporting requirements. Reports of major incidents go to the National Response Center, which in turn is linked with CHEMTREC, a public service hotline established by the chemical manufacturing industry for emergency responders to obtain information and assistance for emergency incidents involving chemicals and hazardous materials.

Hazardous materials regulations are implemented by the Research and Special Programs Administration (RSPA) branch of the U.S. DOT. The regulations cover the definition and classification of hazardous materials, communication of hazards to workers and the public, packaging and labeling requirements, operational rules for shippers, and training. These regulations apply to interstate, intrastate, and foreign commerce by air, rail, ships, and motor vehicles, and also cover hazardous waste shipments. The Federal Aviation Administration Office of Hazardous Materials Safety is responsible for overseeing the safe handling of hazardous materials aboard aircraft. The Federal Railroad Administration oversees the transportation of hazardous materials by rail. The U.S. Coast Guard regulates the bulk transport of hazardous materials by sea. The Federal Highway Administration (FHWA) is responsible for highway routing of hazardous materials and issuing highway safety permits.

Hazardous Materials and Waste Regulations

Resource Conservation and Recovery Act: The Resource Conservation and Recovery Act (RCRA) of 1976 authorizes the U.S. EPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. In 1984, RCRA was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by the U.S. EPA, stricter hazardous waste standards, and a comprehensive underground storage tank program. Likewise, the Hazardous and Solid Waste Amendments focused on waste reduction and corrective action for hazardous releases. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Amendments. Individual states may implement their own hazardous waste programs under RCRA, with approval by the U.S. EPA. California has been delegated authority to operate its own hazardous waste management program.

Comprehensive Environmental Response, Compensation, and Liability Act: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is often commonly referred to as Superfund, is a federal statute that was enacted in 1980 to address abandoned sites containing hazardous waste and/or contamination. CERCLA was amended in 1986 by the Superfund Amendments and Reauthorization Act, and by the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

CERCLA contains prohibitions and requirements concerning closed and abandoned hazardous waste sites; establishes liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified. The trust fund is funded largely by a tax on the chemical and petroleum industries. CERCLA also provides federal jurisdiction to respond directly to releases or impending releases of hazardous substances that may endanger public health or the environment.

CERCLA also enabled the revision of the National Contingency Plan (NCP) which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List, which identifies hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program.

Prevention of Accidental Releases and Risk Management Programs: Requirements pertaining to the prevention of accidental releases are promulgated in section112 (r) of the CAA Amendments of 1990 [42 U.S.C. §7401 et. seq.]. The objective of these requirements was to prevent the accidental release and to minimize the consequences of any such release of a hazardous substance. Under these provisions, facilities that produce, process, handle or store hazardous substance have a duty to: 1) identify hazards which may result from releases using hazard assessment techniques; 2) design and maintain a safe facility and take steps necessary to prevent releases; and 3) minimize the consequence of accidental releases that occur.

In accordance with the requirements in section 112(r), U.S. EPA adopted implementing guidelines in 40 CFR Part 68. Under this part, stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for and impacts of accidental releases from any processes subject to the federal risk management requirements. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit a Risk Management Plan (RMP). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. At the local level, RMPs are implemented by the local fire departments.

Hazardous Material Worker and Public Safety Requirements

Occupational Safety and Health Administration Regulations: The federal Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labor that was created by Congress under the Occupational Safety and Health Act in 1970. OSHA is the agency responsible for assuring worker safety in the handling and use of chemicals in the workplace. Under the authority of the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety (see 29 CFR Part 1910). These regulations set standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries. Some OSHA regulations contain standards relating to hazardous materials handling to protect workers who handle toxic, flammable, reactive, or explosive materials, including workplace conditions, employee protection requirements, first aid, and fire protection, as well as material handling and storage. For example, facilities which use, store, manufacture, handle, process, or move hazardous materials are required to conduct employee safety training, have available and know how to use safety equipment, prepare illness prevention programs, provide hazardous substance exposure warnings, prepare emergency response plans, and prepare a fire prevention plan.

Procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste are promulgated in 29 CFR Part 1910, Subpart H. Some key subsections in 29 CFR Part 1910, Subpart H are §1910.106 -Flammable Liquids and §1910.120 - Hazardous Waste Operations and Emergency Response. In particular, the Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning, for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities (see 29 CFR Part 1910 Subpart H, §1910.120 (a)(1)(i-v) and §1926.65 (a)(1)(i-v)).

Process Safety Management: As part of the numerous regulations pertaining to worker safety adopted by OSHA, specific requirements that pertain to Process Safety Management (PSM) of Highly Hazardous Chemicals were adopted in 29 CFR Part 1910 Subpart H, §1910.119 and 8 CCR §5189 to protect workers at facilities that have toxic, flammable, reactive or explosive materials. PSM program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan. Specifically, the PSM program requires facilities that use, store, manufacture, handle, process, or move hazardous materials to conduct employee safety training; have an inventory of safety equipment relevant to potential hazards; have knowledge on use of the safety equipment; prepare an illness prevention program; provide hazardous substance exposure warnings; prepare an emergency response plan; and prepare a fire prevention plan.

Emergency Action Plan: An Emergency Action Plan (EAP) is a written document required by OSHA standards promulgated in 29 CFR Part 1910, Subpart E, §1910.38 (a) to facilitate and organize a safe employer and employee response during workplace emergencies. An EAP is required by all that are required to have fire extinguishers. At a minimum, an EAP must include the following: 1) a means of reporting fires and other emergencies; 2) evacuation procedures and emergency escape route assignments; 3) procedures to be followed by employees who remain to operate critical plant operations before they evacuate; 4) procedures to account for all employees after an emergency evacuation has been completed; 5) rescue and medical duties for those employees who are to perform them; and 6) names or job titles of persons who can be contacted for further information or explanation of duties under the plan.

National Fire Regulations: The National Fire Codes (NFC), Title 45, published by the National Fire Protection Association (NFPA) contains standards for laboratories using chemicals, which are not requirements, but are generally employed by organizations in order to protect workers. These standards provide basic protection of life and property in laboratory work areas through prevention and control of fires and explosions, and also serve to protect personnel from exposure to non-fire health hazards.

In addition to the NFC, the NFPA adopted a hazard rating system which is promulgated in NFPA 704 - Standard System for the Identification of the Hazards of Materials for Emergency Response. NFPA 704 is a “standard (that) provides a readily recognized, easily understood system for identifying specific hazards and their severity using spatial, visual, and numerical methods to describe in simple terms the relative hazards of a material. It addresses the health, flammability, instability, and related hazards that may be presented as short-term, acute exposures that are most likely to occur as a result of fire, spill, or similar emergency.” In addition, the hazard ratings per NFPA 704 are used by emergency personnel to quickly and easily identify the risks posed by nearby hazardous materials in order to help determine what, if any, specialty equipment should be used, procedures followed, or precautions taken during the first moments of an emergency response. The scale is divided into four color-coded categories, with blue indicating level of health hazard, red indicating the flammability hazard, yellow indicating the chemical reactivity, and white containing special codes for unique hazards such as corrosivity and radioactivity. Each hazard category is rated on a scale from 0 (no hazard; normal substance) to 4 (extreme risk). Table 3-5 summarizes what the codes mean for each hazards category.

In addition to the information in Table 3-5, a number of other physical or chemical properties may cause a substance to be a fire hazard. With respect to determining whether any substance is classified as a fire hazard, SDS lists the NFPA 704 flammability hazard ratings (e.g., NFPA 704). NFPA 704 is a standard that provides a readily recognized, easily understood system for identifying flammability hazards and their severity using spatial, visual, and numerical methods to describe in simple terms the relative flammability hazards of a material. \

Table 3-5
NFPA 704 Hazards Rating Code

Hazard Rating Code	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
4 = Extreme	Very short exposure could cause death or major residual injury (extreme hazard).	Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will burn readily. Flash point below 73°F.	Readily capable of detonation or explosive decomposition at normal temperatures and pressures.	W = Reacts with water in an unusual or dangerous manner.
3 = High	Short exposure could cause serious temporary or moderate residual injury.	Liquids and solids that can be ignited under almost all ambient temperature conditions. Flash point between 73°F and 100°F.	Capable of detonation or explosive decomposition but requires a strong initiating source, must be heated under confinement before initiation, reacts explosively with water, or will detonate if severely shocked.	**OXY** = Oxidizer
2 = Moderate	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.	Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur. Flash point between 100°F and 200°F.	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water.	**SA** = Simple asphyxiant gas (includes nitrogen, helium, neon, argon, krypton, and xenon).
1 = Slight	Exposure would cause irritation with only minor residual injury.	Must be heated before ignition can occur. Flash point over 200°F.	Normally stable, but can become unstable at elevated temperatures and pressures.	Not applicable
0 = Insignificant	Poses no health hazard, no precautions necessary.	Will not burn.	Normally stable, even under fire exposure conditions, and is not reactive with water.	Not applicable

Although substances can have the same NFPA 704 Flammability Ratings Code, other factors can make each substance's fire hazard very different from each other. For this reason, additional chemical characteristics, such as auto-ignition temperature, boiling point, evaporation rate, flash point, lower explosive limit (LEL), upper explosive limit (UEL), and vapor pressure, are also considered when determining whether a substance is fire hazard. The following is a brief description of each of these chemical characteristics.

Auto-ignition Temperature: The auto-ignition temperature of a substance is the lowest temperature at which it will spontaneously ignite in a normal atmosphere without an external source of ignition, such as a flame or spark.

Boiling Point: The boiling point of a substance is the temperature at which the vapor pressure of the liquid equals the environmental pressure surrounding the liquid. Boiling is a process in which molecules anywhere in the liquid escape, resulting in the formation of vapor bubbles within the liquid.

Evaporation Rate: Evaporation rate is the rate at which a material will vaporize (evaporate, change from liquid to a vapor) compared to the rate of vaporization of a specific known material. This quantity is a represented as a unit-less ratio. For example, a substance with a high evaporation rate will readily form a vapor which can be inhaled or explode, and thus have a higher hazard risk. Evaporation rates generally have an inverse relationship to boiling points (i.e., the higher the boiling point, the lower the rate of evaporation).

Flash Point: Flash point is the lowest temperature at which a volatile liquid can vaporize to form an ignitable mixture in air. Measuring a liquid's flash point requires an ignition source. At the flash point, the vapor may cease to burn when the source of ignition is removed. There are different methods that can be used to determine the flashpoint of a solvent but the most frequently used method is the Tagliabue Closed Cup standard (ASTM D56), also known as the TCC. The flashpoint is determined by a TCC laboratory device which is used to determine the flash point of mobile petroleum liquids with flash point temperatures below 175 degrees Fahrenheit (79.4 degrees Centigrade).

Flash point is a particularly important measure of the fire hazard of a substance. For example, the Consumer Products Safety Commission (CPSC) promulgated Labeling and Banning Requirements for Chemicals and Other Hazardous Substances in 15 U.S.C. §1261 and 16 CFR Part 1500. Per the CPSC, the flammability of a product is defined in 16 CFR Part 1500.3 (c)(6) and is based on flash point. For example, a liquid needs to be labeled as: 1) "Extremely Flammable" if the flash point is below 20 degrees Fahrenheit; 2) "Flammable" if the flash point is above 20 degrees Fahrenheit but less than 100 degrees Fahrenheit; or 3) "Combustible" if the flash point is above 100 degrees Fahrenheit up to and including 150 degrees Fahrenheit.

Lower Explosive Limit (LEL): The lower explosive limit of a gas or a vapor is the limiting concentration (in air) that is needed for the gas to ignite and explode or the lowest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (e.g., arc, flame, or heat). If the concentration of a substance in air is below the LEL, there is not enough fuel to continue an explosion. In other words, concentrations lower than the LEL are "too lean" to burn. For example, methane gas has a LEL of 4.4 percent (at 138 degrees Centigrade) by volume, meaning 4.4 percent of the total volume of the air consists of methane. At 20 degrees Centigrade, the LEL for methane is 5.1 percent by volume. If the atmosphere has less than 5.1 percent methane, an explosion cannot occur even if a source of ignition is present. When the concentration of methane reaches 5.1 percent, an explosion can occur if there is an ignition source.

Upper Explosive Limit (UEL): The upper explosive limit of a gas or a vapor is the highest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (e.g., arc, flame, or heat). Concentrations of a substance in air above the UEL are "too rich" to burn.

Vapor Pressure: Vapor pressure is an indicator of a chemical's tendency to evaporate into gaseous form.

Health Hazards Guidance: In addition to fire impacts, health hazards can also be generated due to exposure of chemicals present in both conventional as well as reformulated products. Using available toxicological information to evaluate potential human health impacts associated with conventional solvents and potential replacement solvents, the toxicity of the conventional solvents can be compared to solvents expected to be used in reformulated products. As a measure of a chemical's potential health hazards, the following values need to be considered: the Threshold Limit Values established by the American Conference of Governmental Industrial Hygiene, OSHA's Permissible Exposure Limits, the Immediately Dangerous to Life and Health levels recommended by the National Institute for Occupational Safety and Health (NIOSH), and health hazards developed by the National Safety Council. The following is a brief description of each of these values.

Threshold Limit Values (TLVs): The TLV of a chemical substance is a level to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. The TLV is an estimate based on the known toxicity in humans or animals of a given chemical substance, and the reliability and accuracy of the latest sampling and analytical methods. The TLV for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. Its units are in parts per million (ppm) for gases and in milligrams per cubic meter (mg/m^3) for particulates. The TLV is a recommended guideline by ACGIH.

Permissible Exposure Limits (PEL): The PEL is a legal limit, usually expressed in ppm, established by OSHA to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. A PEL is usually given as a time-weighted average (TWA), although some are short-term exposure limits (STEL) or ceiling limits. A TWA is the average exposure over a specified period of time, usually eight hours. This means that, for limited periods, a worker may be exposed to concentrations higher than the PEL, so long as the average concentration over eight hours remains lower. A short-term exposure limit is one that addresses the average exposure over a 15 to 30-minute period of maximum exposure during a single work shift. A ceiling limit is one that may not be exceeded for any period of time, and is applied to irritants and other materials that have immediate effects. The OSHA PELs are published in 29 CFR 1910.1000, Table Z1.

Immediately Dangerous to Life and Health (IDLH): IDLH is an acronym defined by NIOSH as exposure to airborne contaminants that is "likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment." IDLH values are often used to guide the selection of breathing apparatus that are made available to workers or firefighters in specific situations.

State Regulations

Hazardous Materials and Waste Regulations

California Hazardous Waste Control Law: The California Hazardous Waste Control Law is administered by CalEPA to regulate hazardous wastes within the State of California. While the California Hazardous Waste Control Law is generally more stringent than RCRA, both the state and federal laws apply in California. The California Department of Toxic Substances Control (DTSC) is the primary agency in charge of enforcing both the federal and state hazardous materials laws in California. The DTSC regulates hazardous waste, oversees the cleanup of existing contamination, and pursues avenues to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California under the authority of RCRA, the California Hazardous Waste Control Law, and the Health and Safety Code. Under the direction of the CalEPA, the DTSC maintains the Cortese List and Envirostor databases of hazardous materials and waste sites as specified under Government Code §65962.5. The Cortese List consists of the following:

1. **Subsection 65962.5. (a)**
   List provided by DTSC that includes:
   a. All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.
   b. All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.
   c. All information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.
   d. All sites listed pursuant to Section 25356 of the Health and Safety Code.
   e. All sites included in the Abandoned Site Assessment Program.

2. **Subsection 65962.5. (b)**
   The State Department of Health lists of all public drinking water wells that contain detectable levels of organic contaminants and that are subject to water analysis pursuant to Section 116395 of the Health and Safety Code.

3. **Subsection 65962.5. (c)**
   The State Water Resources Control Board shall list of all of the following:
   a. All underground storage tanks for which an unauthorized release report is filed pursuant to Section 25295 of the Health and Safety Code.
   b. All solid waste disposal facilities from which there is a migration of hazardous waste and for which a California regional water quality control board has notified the Department of Toxic Substances Control pursuant to subdivision (e) of Section 13273 of the Water Code.
   c. All cease and desist orders issued after January 1, 1986, pursuant to Section 13301 of the Water Code, and all cleanup or abatement orders issued after January 1, 1986, pursuant to Section 13304 of the Water Code, that concern the discharge of wastes that are hazardous materials.

4. **Subsection 65962.5. (d)**
   The appropriate local enforcement agency will list of all solid waste disposal facilities from which there is a known migration of hazardous waste.

The Hazardous Waste Control Law (22 CCR Chapter 11, Appendix X) also lists 791 chemicals and approximately 300 common materials which may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Occupational Safety and Health Administration: The California Occupational Safety and Health Administration (CalOSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. The CalOSHA requires the employer to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. CalOSHA standards are generally more stringent than federal regulations.

Hazardous Materials Release Notification: Many state statutes require emergency notification of a hazardous chemical release, including:

- Health and Safety Code §25270.7, §25270.8, and §25507;
- California Vehicle Code §23112.5;
- California Public Utilities Code §7673 (General Orders #22-B, 161);
- California Government Code §51018 and §8670.25.5(a);
- California Water Code §13271 and §13272; and
- California Labor Code §6409.1(b)(10).

California Accident Release Prevention (CalARP) Program: The California Accident Release Prevention Program (19 CCR Division 2, Chapter 4.5) requires the preparation of RMPs. CalARP requires stationary sources with more than a threshold quantity of a regulated substance to be evaluated to determine the potential for and impacts of accidental releases from any processes on-site (not transport) subject to state risk management requirements. RMPs are documents prepared by the owner or operator of a stationary source containing detailed information including: (1) regulated substances held onsite at the stationary source; (2) offsite consequences of an accidental release of a regulated substance; (3) the accident history at the stationary source; (4) the emergency response program for the stationary source; (5) coordination with local emergency responders; (6) hazard review or process hazard analysis; (7) operating procedures at the stationary source; (8) training of the stationary source's personnel; (9) maintenance and mechanical integrity of the stationary source's physical plant; and (10) incident investigation. The CalARP Program is implemented at the local government level by Certified Unified Program Agencies (CUPAs) also known as Administering Agencies (AAs). Typically, local fire departments are the administering agencies of the CalARP Program because they frequently are the first responders in the event of a release. California is proposing modifications to the CalARP Program along with the state’s PSM program in response to an accident at the Chevron Richmond Refinery. The proposed regulations were released for public comment on July 15, 2016 and the public comment period closed on September 15, 2016.

Hazardous Materials Disclosure Program: The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) as promulgated by CalEPA in CCR, Title 27, Chapter 6.11 requires the administrative consolidation of six hazardous materials and waste programs (program elements) under one agency, a CUPA. The Unified Program administered by the State of California consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs ("Tiered Permitting"); Above ground SPCC Program; Hazardous Materials Release Response Plans and Inventories (business plans); the CalARP Program; the UST Program; and the Uniform Fire Code Plans and Inventory Requirements. The Unified Program is implemented at the local government level by CUPAs.

Hazardous Materials Management Act: The State of California (Health and Safety Code Division 20, Chapter 6.95) requires any business that handles more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a Hazardous Materials Business Plan to its CUPA. Business plans must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel. The requirements for hazardous materials business plans are specified in the Health and Safety Code and 19 CCR.

Hazardous Materials Transportation in California: California regulates the transportation of hazardous waste originating or passing through the State in Title 13, CCR. The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams at locations throughout the state.

California Fire Code: While NFC Standard 45 and NFPA 704 are regarded as nationally recognized standards, the California Fire Code (24 CCR) also contains state standards for the use and storage of hazardous materials and special standards for buildings where hazardous materials are found. Some of these regulations consist of amendments to NFC Standard 45. State Fire Code regulations require emergency pre-fire plans to include training programs in first aid, the use of fire equipment, and methods of evacuation.

Local Regulations

Los Angeles County: The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. Los Angeles County's policies towards hazardous materials management include enforcing stringent site investigations for factors related to hazards; limiting the development in high hazard areas, such as floodplains, high fire hazard areas, and seismic hazard zones; facilitating safe transportation, use, and storage of hazardous materials; supporting lead paint abatement; remediating Brownfield sites; encouraging the purchase of homes on the FEMA Repeat Hazard list and designating the land as open space; enforcing restrictions on access to important energy sites; limiting development downslope from aqueducts; promoting safe alternatives to chemical-based products in households; and prohibiting development in floodways. The county has defined effective emergency response management capabilities to include supporting county emergency providers with reaching their response time goals; promoting the participation and coordination of emergency response management between cities and other counties at all levels of government; coordinating with other county and public agency emergency planning and response activities; and encouraging the development of an early warning system for tsunamis, floods and wildfires.

Orange County: Orange County's Hazardous Materials Program Office is responsible for facilitating the coordination of various parts of the County's hazardous materials program; assisting in coordinating county hazardous materials activities with outside agencies and organizations; providing comprehensive, coordinated analysis of hazardous materials issues; and directing the preparation, implementation, and modification of the county's Hazardous Waste Management Plan (HWMP). Orange County is responsible for its own emergency plans concerning a nuclear power plant accident, and the Incident Response Plan is updated regularly.

The regulatory agency responsible for enforcement, as well as inspection of pipelines transporting hazardous materials, is the California State Fire Marshal's Office, Hazardous Liquid Pipeline Division. The Orange County Health Care Agency (OCHCA) has been designated by the Board of Supervisors as the agency to enforce the underground storage tank (UST) program. The OCHCA UST Program regulates approximately 7,000 of the 9,500 underground tanks in Orange County. The program includes conducting regular inspections of underground tanks; oversight of new tank installations; issuance of permits; regulation of repair and closure of tanks; ensuring the mitigation of leaking USTs; pursuing enforcement action; and educating and assisting the industries and general public as to the laws and regulations governing USTs. Under mandate from the California HSC, the Orange County Fire Authority is the designated agency to inventory the distribution of hazardous materials in commercial or industrial occupancies, develop and implement emergency plans, and require businesses that handle hazardous materials to develop emergency plans to deal with these materials.

San Bernardino County: San Bernardino County's HWMP serves as the primary planning document for the management of hazardous waste in San Bernardino County. The HWMP identifies the types and amounts of wastes generated; establishes programs for managing these wastes; identifies an application review process for the siting of specified hazardous waste facilities; identifies mechanisms for reducing the amount of waste generated; and identifies goals, policies, and actions for achieving effective hazardous waste management. One of the county's stated goals is to minimize the generation of hazardous waste and reduce the risk posed by storage, handling, transportation, and disposal of hazardous wastes. In addition, the county will protect its residents and visitors from injury and loss of life and protect property from fires by deploying firefighters and requiring new land developments to prepare site-specific fire protection plans.

Riverside County: Through its membership in the Southern California Hazardous Waste Management Authority (SCHWMA), the County of Riverside has agreed to work on a regional level to solve problems involving hazardous waste. SCHWMA was formed through a joint powers agreement between Santa Barbara, Ventura, San Bernardino, Orange, San Diego, Imperial, and Riverside Counties and the Cities of Los Angeles and San Diego. Working within the concept of "fair share," each SCHWMA county has agreed to take responsibility for the treatment and disposal of hazardous waste in an amount that is at least equal to the amount generated within that county. This responsibility can be met by siting hazardous waste management facilities (transfer, treatment, and/or repository) capable of processing an amount of waste equal to or larger than the amount generated within the county, or by creating intergovernmental agreements between counties to provide compensation to a county for taking another county's waste, or through a combination of both facility siting and intergovernmental agreements. When and where a facility is to be sited is primarily a function of the private market. However, once an application to site a facility has been received, the county will review the requested facility and its location against a set of established siting criteria to ensure that the location is appropriate and may deny the application based on the findings of this review. The County of Riverside does not presently have any of these facilities within its jurisdiction and, therefore, must rely on intergovernmental agreements to fulfill its fair share responsibility to SCHWMA.

Emergency Response to Hazardous Materials and Waste Incidents

California Emergency Management Agency: The California Emergency Management Agency (Cal EMA) exists to enhance safety and preparedness in California through strong leadership, collaboration, and meaningful partnerships. The goal of Cal EMA is to protect lives and property by effectively preparing for, preventing, responding to, and recovering from all threats, crimes, hazards, and emergencies. Cal EMA under the Fire and Rescue Division coordinates statewide implementation of hazardous materials accident prevention and emergency response programs for all types of hazardous materials incidents and threats. In response to any hazardous materials emergency, Cal EMA is called upon to provide state and local emergency managers with emergency coordination and technical assistance.

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government agencies and private persons. Response to hazardous materials incidents is one part of this Emergency Response Plan. The Emergency Response Plan is administered by Cal EMA which coordinates the responses of other agencies. Six mutual aid and Local Emergency Planning Committee (LEPC) regions have been identified for California that are divided into three areas of the state designated as the Coastal (Region II, which includes 16 counties with 151 incorporated cities and a population of about eight million people.), Inland (Region III, Region IV and Region V, which includes 31 counties with 123 incorporated cities and a population of about seven million people), and Southern (Region I and Region VI, which includes 11 counties with 226 incorporated cities and a population of about 22 million people). The South Coast AQMD jurisdiction covers portions of Region I and Region VI.

In addition, pursuant to the Hazardous Materials Release Response Plans and Inventory Law of 1985, local agencies are required to develop "area plans" for response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the business plans submitted by persons who handle hazardous materials. An area plan must include pre-emergency planning of procedures for emergency response, notification, coordination of affected government agencies and responsible parties, training, and follow-up.

Hazardous Materials Incidents

Hazardous materials move through the region by a variety of modes: Truck, rail, air, ship, and pipeline. The movement of hazardous materials implies a degree of risk, depending on the materials being moved, the mode of transport, and numerous other factors (e.g., weather and road conditions). According to the Office of Hazardous Materials Safety (OHMS) in the U.S. DOT, hazardous materials shipments can be regarded as equivalent to deliveries, but any given shipment may involve one or more movements or trip segments, which may occur by different routes (e.g., rail transport with final delivery by truck). According to the Commodity Flow Survey data[14] there were approximately 2.6 billion tons of hazardous materials shipments in the United States in 2012 (the last year for which data are available). Table 3-6 indicates that trucks move more than 50 percent and pipeline accounts for approximately 24 percent of all hazardous materials shipped from a location in the United States. By contrast, rail accounts for only 4.3 percent of shipments[15].

Table 3-6
Hazardous Material Shipments in the United States in 2012

Mode	Total Commercial Freight (thousand tons)	Hazardous Materials Shipped (thousand tons)	Percent of Total Hazardous Materials Shipped by Mode of Transportation	Percent of Total Commercial Freight Shipped that is Hazardous
Truck	8,060,166	1,531,405	59.4%	19.0%
Rail	1,628,537	110,988	4.3%	6.8%
Water	575,996	283,561	11.0%	49.2%
Pipeline	635,975	626,652	24.3%	98.5%
Other	398,735	27,547	1.1%	6.9%
Total	**11,299,409**	**2,580,153**	**100.0%**	**22.8%**

Source: U.S. DOT[16,17]

The movement of hazardous materials through the U.S. transportation system represents about 22.8 percent of total tonnage for all freight shipments as measured by the Commodity Flow Survey. Comparatively, the total commercial freight moved in 2012 in California by all transportation modes was 718,345 thousand tons[18].

California Hazardous Materials Incident Reporting System: The California Hazardous Materials Incident Reporting System (CHMIRS) is a post incident reporting system to collect data on incidents involving the accidental release of hazardous materials in California. Information on accidental releases of hazardous materials are reported to and maintained by Cal EMA. While information on accidental releases are reported to Cal EMA, Cal EMA no longer conducts statistical evaluations of the releases, e.g., total number of releases per year for the entire State, or data by county. The U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) provides access to retrieve data from the Incident Reports Database, which also includes non-pipeline incidents, e.g., truck and rail events. Incident data and summary statistics, e.g., release

[14] USDOT, 2015. United States: 2012; 2012 Economic Census and 2012 Commodity Flow Survey. Issued March 2015. Available at http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/ec12tcf-us.pdf

[15] USDOT, 2015. United States: 2012; 2012 Economic Census and 2012 Commodity Flow Survey. Issued March 2015. Available at http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/ec12tcf-us.pdf

[16] USDOT, 2016. Table 1a. Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2012. Accessed July 25. 2016. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2012/hazardous_materials/table1a

[17] USDOT, 2016a. Table 1a. Shipment Characteristics by Mode of Transportation for the United States: 2012. Accessed July 25, 2016. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/ files/publications/commodity_flow_survey/2012/united_states/table1

[18] USDOT, 2016b. Table 3: Weight of Outbound Commodity Flows by State of Origin: 2012. Accessed July 25, 2016. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2012/state_summaries/tables/table3

date, geographical location (state and county) and type of material released, are available online from the Hazmat Incident Database.

Table 3-7 provides a summary of the reported hazardous material incidents for Los Angeles, Orange, Riverside, and San Bernardino counties for 2012 through 2014 from the Hazmat Incident Database[19]. Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the South Coast AQMD.

Table 3-7
Reported Hazardous Materials Incidents for 2012 - 2014

County	2012	2013	2014
Los Angeles	286	337	287
Orange	270	63	88
Riverside	55	43	50
San Bernardino	261	348	351
Total	**872**	**791**	**776**

In 2012, there were a total of 872 incidents reported for Los Angeles, Orange, Riverside and San Bernardino counties. In 2013, there were a total of 791 incidents reported for Los Angeles, Orange, Riverside and San Bernardino counties, and in 2014 a total of 776 incidents for these four counties. Over the three-year period, San Bernardino and Los Angeles counties accounted for the largest number of incidents, followed by Orange and Riverside counties. As noted in Table 3-7, the number of incidents has reduced over the years.

Hazards Associated with Air Pollution Control

The South Coast AQMD has evaluated the hazards associated with previous AQMPs, proposed South Coast AQMD rules, and non-South Coast AQMD projects where the South Coast AQMD is the Lead Agency pursuant to CEQA. Add-on pollution control technologies, such as SCR, have been previously analyzed for hazards. The use of add-on pollution control equipment may concentrate or utilize hazardous materials. A malfunction or accident when using add-on pollution control equipment could potentially expose people to hazardous materials, explosions, or fires. The South Coast AQMD has determined that the transport, use, and storage of ammonia, both aqueous and anhydrous, (used in SCR systems) may have significant hazard impacts in the event of an accidental release. Further analyses have indicated that the use of aqueous ammonia (instead of anhydrous ammonia) can usually reduce the hazards associated with ammonia use in SCR systems to less than significant.

[19] Pipeline and Hazardous Materials Safety Administration (PHMSA), 2015. Incident Reports Database Search. Accessed, November 17, 2015 at https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/Welcome.aspx

Ammonia

Ammonia is the primary hazardous chemical identified with the use SCR technology. Ammonia, though not a carcinogen, can have chronic and acute health impacts. Therefore, a potential increase in the use of ammonia may increase the current existing risk setting associated with deliveries (e.g., truck and road accidents) and onsite or offsite spills for each facility that currently uses or will begin to use ammonia. Exposure to a toxic gas cloud is the potential hazard associated with this type of control equipment. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud that migrates off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, it would form a cloud at ground level rather than be dispersed. "Worst-case" conditions tend to arise when very low wind speeds coincide with the accidental release, which can allow the chemicals to accumulate rather than disperse. Though there are facilities that may be affected by the 2016 AQMP control measures that are currently permitted to use anhydrous ammonia, for any new construction, current South Coast AQMD policy no longer allows the use of anhydrous ammonia. Instead, to minimize the hazards associated with ammonia used in the SCR or SNCR process, aqueous ammonia, no more than 19 percent by volume, is typically required as a permit condition associated with the installation of SCR or SNCR equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and 2) 19 percent aqueous ammonia is not on any acutely hazardous materials lists unlike anhydrous ammonia or aqueous ammonia at higher percentages.

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

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

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

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This document is a SEA to the March 2017 Final Program EIR for the 2016 AQMP. The March 2017 Final Program EIR for the 2016 AQMP determined that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts to seven topic areas – air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation. More specifically, the March 2017 Final Program EIR evaluated the impacts from installation and operation of additional control equipment and SCR or selective non-catalytic reduction (SNCR) equipment potentially resulting in construction emissions, increased electricity demand, hazards from additional ammonia transport and use, increase in water use and wastewater discharge, changes in noise volume, generation of solid waste from construction and disposal of old equipment and catalysts replacements, as well as changes in traffic patterns and volume.

For the entire 2016 AQMP, the analysis concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. Since significant adverse environmental impacts were identified, mitigation measures were identified and applied. However, the March 2017 Final Program EIR concluded that the 2016 AQMP would have significant and unavoidable adverse environmental impacts even after mitigation measures were identified and applied. As such, mitigation measures were made a condition of project approval and a Mitigation Monitoring and Reporting Plan was adopted. Findings were made and a Statement of Overriding Considerations was prepared and adopted for this project.

The proposed project is comprised of amendments to Rules 1110.2 and 1100. However, PAR 1100 contains administrative changes that would not require any physical modifications to occur at affected facilities; thus, no environmental impacts are expected to occur from implementing PAR 1100. Thus, the analysis in this SEA focuses on the physical modifications expected to occur at affected facilities in response to complying with PAR 1110.2 and the corresponding environmental effects.

PAR 1110.2 proposes to remove exemptions previously allowed under the RECLAIM program for internal combustion engines with a rating greater than 50 bhp. Engines operated at RECLAIM or former RECLAIM facilities would therefore be required to comply with current BARCT in accordance with existing Rule 1110.2 NOx emission limits and also comply with existing monitoring, reporting, and recordkeeping requirements. PAR 1110.2 also proposes to establish ammonia limits and require ammonia emissions monitoring. Staff is proposing to add language to clarify the applicability of the rule to engines operated at remote radio transmission towers. Internal combustion engines located at RECLAIM and former RECLAIM facilities subject to Rule 1110.2 will be required to meet the applicable NOx concentration limit by December 31, 2023. For PAR 1110.2, compliance is expected to be achieved through repowering or replacing existing engines and installing new NOx control technology such as SCR systems or modifying the existing control system. The proposed NOx emission reductions are expected to improve overall air quality in the South Coast AQMD's jurisdiction and further the progress towards attaining and maintaining state and NAAQS for ozone, PM10, and PM2.5. However, the implementation of the proposed project could create both direct and indirect air quality and hazards and hazardous materials impacts.

As demonstrated in the following analysis, the construction associated with installing new air pollution control equipment, or repowering, replacing, or retrofitting existing engines in order to reduce NOx emissions, is not expected to exceed the South Coast AQMD's air quality significance thresholds for construction or operation. Further, after construction is completed, the operation of any repowered, replaced, or retrofitted engines would reduce NOx emissions overall, thus, reducing any potential adverse impact to air quality. However, for the topic of hazards and hazardous materials, the analysis assumes that for any installation of a SCR system, a corresponding installation of one new ammonia storage tank will be necessary. The potential proximity of any new ammonia storage tank to any nearby sensitive receptor could potentially have a significant adverse hazards and hazardous materials impact. For this reason, the analysis concludes that the implementation of the proposed project would be expected to have significant adverse hazards and hazardous materials impacts from the storage and use of ammonia to operate any new SCR systems that are installed.

No other environmental topic areas are expected to have new adverse impacts that were not previously analyzed in the March 2017 Final Program EIR for the 2016 AQMP. Thus, only the topics of air quality and hazards and hazardous materials have been analyzed in this SEA.

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

AIR QUALITY IMPACTS

Significance Criteria

The environmental analysis assumes that installation of NOx air pollution control equipment (e.g., SCR systems) for the affected sources will reduce NOx emissions overall, but construction activities associated with both the installation of new air pollution control devices and the repowering or replacement of existing gas turbines and modification of existing control devices will create secondary air quality impacts (e.g., emissions), which can adversely affect local and regional air quality. An affected facility may generate emissions both during the construction period and through ongoing daily operations. During installation of SCR systems or the repowering or replacement of existing engines or modification of existing NOx control devices, emissions may be generated by onsite construction equipment and by offsite vehicles used for worker commuting. After construction activities are completed, additional emissions may be generated from the increased electricity use of the SCRs (as GHGs) and offsite vehicles (as criteria pollutants and GHGs) used for delivering fresh materials (e.g., chemicals, fresh catalyst, etc.) needed for operations and hauling away solid waste for disposal or recycling (e.g., spent catalyst). To determine whether air quality impacts from implementing the proposed project are significant, impacts will be evaluated and compared to the criteria in Table 4-1. If impacts exceed any of the air quality 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. In general, the South Coast AQMD makes significance determinations for construction and operational impacts based on the maximum or peak daily emissions during the construction or operation period, which provides a "worst-case" analysis of the construction and operational emissions. The type of emission reduction projects that may be or expected to be undertaken to comply with the proposed project are primarily the installation of SCR technology and the repowering or replacement of existing engines; thus, this will be analyzed in this SEA.

To comply with the proposed emission limits of PAR 1110.2, a facility has the following options: 1) modify the existing NSCR system for rich-burn engines; 2) modify the existing SCR system(s); 3) install an SCR system and associated ammonia storage tank for lean-burn engines; 4) repower their existing engine and install air pollution controls; or 5) replace their existing engine and install air pollution controls. The following construction analysis evaluates each of these options individually. However, due to the number of affected engines and a compliance date of December 31, 2023, the "worst-case" construction analysis is based on a combination of these options with overlapping construction activities.

Table 4-1
South Coast AQMD Air Quality Significance Thresholds

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

[a] Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 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 South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on South Coast AQMD Rule 403.

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

Revision: April 2019

Project-Specific Air Quality Impacts During Construction

Construction-related emissions can be distinguished as either onsite or offsite. Onsite emissions generated during construction principally consist of exhaust emissions (NOx, SOx, CO, VOC, PM2.5 and PM10) from heavy-duty construction equipment operation, fugitive dust (primarily as PM10) from disturbed soil, and VOC emissions from asphaltic paving and painting. Offsite emissions during the construction phase normally consist of exhaust emissions and entrained paved road dust (primarily as PM10) from worker commute trips, material delivery trips, and haul truck material trips to and from the construction site. In general, limited construction emissions from site preparation activities, which may include earthmoving/grading, are anticipated because the each affected facility, typically, has already been graded and paved. Further, operators at each affected facility who install air pollution control equipment such as SCR technology to reduce NOx emissions will also need to utilize chemicals such as ammonia and catalyst as part of the process. As such, a new ammonia storage tank will need to be installed along with a containment berm large enough to hold 110 percent of the tank capacity in the event of an accidental release, pursuant to U.S. EPA's spill prevention control and countermeasure regulations.

To estimate the "worst-case" construction- and operational-related emissions associated with repowering or replacing an internal combustion engine and installing new SCR systems in order to comply with the NOx emission limits in PAR 1110.2, assumptions were made to estimate combustion emissions from construction activities occurring onsite, off-site on-road emissions from worker trips, deliveries and haul trips, and on-site fugitive dust emissions, and operational emissions from deliveries and haul trips.

Among the 21 RECLAIM facilities subject to PAR 1110.2, a total of 10 facilities that are expected to require modifications to comply with the proposed emission limits. The remaining facilities operate engines that either currently meet the proposed emission limits or are eligible for exemptions from the emission limits in PAR 1110.2. Amongst the 10 facilities that will require modifications to comply with PAR 1110.2, 45 engines are expected to be replaced, repowered, or retrofitted with air pollution control equipment in order to comply with the NOx limits in PAR 1110.2. Of the 45 engines, six are equipped with SCR systems that are not capable of achieving the more stringent NOx emission limits in PAR 1110.2 and will need to increase the amount of urea injected and possibly require new, more efficient catalyst. Subsequently, there will be an increase in their urea usage in order to meet the proposed emission limits in PAR 1110.2. Fifteen lean burn engines are expected to be retrofitted with new SCR systems. For any facility that operates a lean burn engine that is not equipped with any air pollution control equipment for reducing NOx emissions, a new SCR system with a new ammonia tank will need to be installed. There are currently six lean burn engines operated at a facility in the OCS. Due to operational limitations, retrofitting the engines with SCR technology is not feasible. Therefore, it is assumed that these engines will be replaced with rich burn engines equipped with NSCR technology such as a three-way catalyst. There are also eight lean burn engines operated at two facilities which will be repowered with stationary gas turbines equipped with SCR technology. Although some of the impacts associated with the construction of new SCR systems were evaluated in the Final Subsequent Environmental Assessment for PAR 1134 that was certified on April 5, 2019[20], for the purpose of this SEA, impacts from construction of the new stationary gas turbines, SCR systems, and associated ammonia tanks will be included and evaluated as the "worst-case" scenario. Other

[20] South Coast AQMD, Final Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, certified April 2019. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2019/par-1134---final-sea_with_appdx.pdf

minor construction activities will also be required for existing rich burn engines utilizing NSCR catalysts. This includes replacing the air-to-fuel ratio controller, tuning the system, and/or replacing the NSCR catalyst with new, more efficient catalyst. A summary of the affected units analyzed in this SEA are shown in Table 4-2.

Table 4-2
Proposed Construction Activities

Construction Activities	Number of Affected Units
Modification of existing SCR or NSCR systems	16
Engines expected to be retrofitted with new SCR	15
Engines expected to be replaced and new NSCR catalyst to be installed (OCS facility)	6
Engines expected to be repowered with new stationary gas turbines and new SCR	8
Total Number of Affected Stationary Engines	**45**

The scenarios requiring the most construction and subsequently resulting in the highest daily peak emissions are the following: 1) retrofitting lean burn engines with SCR technology; 2) replacing lean burn engines operated in the OCS with rich burn engines utilizing NSCR technology; and 3) repowering lean burn engines with stationary gas turbines and installing SCR technology for NOx control. However, there are only six engines which are all located at the same facility that will need to be replaced. Further, as discussed previously, although there are 16 engines with existing NOx control equipment, only six are equipped with SCR and will need to replace their existing catalyst and potentially the catalyst housing. The remaining ten engines will need minor changes such as replacing the air-to-fuel ratio controller or replacing the catalyst with more efficient catalyst. For this reason, the environmental analysis in this SEA assumes that overlapping construction activities from the installation of SCR systems and associated ammonia storage tank at one facility and repowering of engines with stationary gas turbines at two facilities, which is expected to result in the “worst-case” emissions.

Existing SCR or NSCR System Modifications

There are currently six lean burn engines at one facility utilizing SCR systems to control NOx. To comply with current BARCT limits, the SCR system is expected to be modified which includes using a different catalyst that may require new catalyst housing and piping. This facility has an existing 5,000 gallon urea tank and is not expected to require any additional tanks. Additional urea usage is expected to achieve BARCT limits and subsequently truck trips are assumed to be required.

There are 10 rich burn engines at three facilities that are currently equipped with NSCR systems. The existing NSCR systems are currently capable of achieving NOx emissions levels of 28 ppm or less. Therefore, minor modifications such as replacing and tuning the air-to-fuel ratio controller and/or replacing the NSCR catalyst are expected to reach BARCT NOx limits of 11 ppm. However, in the event new, more efficient catalysts is required, the facility may also need to replace the catalyst housing if the new catalyst is not compatible with the existing housing. This scenario represents the “worst-case” and would require similar construction activities as modifying an existing SCR system. Typical equipment that may be needed to complete each construction phase at a single affected facility is presented in Table 4-3.

Table 4-3
Construction Equipment That May Be Needed to Modify an Existing SCR or NSCR System at One Facility

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Tractors/Loaders/Backhoes	2	6
Building Construction	Aerial Lifts	1	4
Building Construction	Cranes	1	3
Building Construction	Forklifts	1	6
Building Construction	Generator Sets	1	7
Building Construction	Tractors/Loaders/Backhoes	1	4

Construction emissions associated with modifying an existing SCR system at one facility were estimated using the California Emission Estimator Model (CalEEMod), version 2016.3.2. The following assumption were made:

- The dismantling and demolition process is estimated to take two days and construction of the catalyst housing and catalyst installation is expected to take 10 days. No site preparation or paving is expected since modifications will be made to existing SCR or NSCR systems.
- Four workers would be needed to dismantle the catalyst housing and install the new catalyst housing and catalyst. One hauling trip would be needed for demolition and one vendor trip would be needed per day during construction.
- No additional employees are expected to be needed to operate and maintain the SCR system since operation and maintenance activities are expected to be similar.

Table 4-4 presents the peak daily emissions for the construction of one SCR system and ammonia storage tank at one facility, and the quantity of peak daily construction emissions are less than the South Coast AQMD's air quality significance thresholds for construction. Appendix B contains the CalEEMod output files for the annual, summer, and winter construction emissions for the construction of one SCR system at one facility.

Table 4-4
Peak Daily Emissions from Construction Activities of Modifying an Existing SCR or NSCR System at One Facility

Peak Daily Construction Emissions	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Modification of 1 SCR system	0.6	5.0	5.6	0.0	0.4	0.3
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

SCR System Installation

Currently, there are 23 engines that are not equipped with SCR technology. Eight of the engines will be repowered with stationary gas turbines and also new SCR systems. The remaining 15 engines will be retrofitted with a new SCR system. If facility owners/operators of these 15 turbines decide to install 15 SCR systems, 15 ammonia or urea storage tanks (e.g., one storage tank for each SCR system) could potentially be installed because SCR systems utilize ammonia or urea in the NOx reduction process. However, for any operator installing more than one SCR system at one facility, this analysis assumes that only one large aqueous ammonia storage tank would be installed in lieu of multiple, smaller ammonia storage tanks, because it is likely and expected the facilities would want to simplify their ammonia delivery schedule. For example, several RECLAIM facilities have at least two engines that are each expected to utilize new SCR technology; therefore, it is possible that the facility operator of these facilities would elect to install one larger aqueous ammonia or urea storage tank, in lieu of two smaller tanks, to service the two new SCR systems. Also by assuming that one larger storage tank would be installed in lieu of multiple smaller storage tanks, the hazards and hazardous materials impacts from a catastrophic failure of the larger ammonia tank would represent the “worst-case” off-site consequence in the event of a spill. The size of each storage tank that may be needed to supply ammonia or urea to each SCR system has been estimated to range between 250 and 5,000 gallons in capacity. As previously discussed, there are also six existing SCR systems located at one facility that may not be capable of achieving the proposed NOx emission limits. As such, it is assumed that the facility will continue to use the existing urea tank. The existing urea tank is 5,000 gallons in capacity; however, the increase in ammonia usage will only affect the number of truck trips to deliver the ammonia and not the amount of ammonia stored on site.

Some facilities may have sufficient space to install one new SCR system and one new ammonia storage tank for their engine and would likely expect minor modifications to the existing facility. However, because installation of a SCR system and associated ammonia storage tank may need to occupy the space of existing equipment, demolition activities are assumed to occur prior to installation of the new equipment in order to remove any existing equipment or structures (as applicable), remove old piping and electrical connections, and break up the old foundation. For these reasons, slab pouring or paving activities are also anticipated and were analyzed.

The type of construction-related activities attributable to installing a new SCR system and associated ammonia storage tank would consist predominantly of deliveries of steel, piping, wiring, chemicals, catalysts, and other materials, and would also involve maneuvering the materials within the site via a variety of off-road equipment such as a crane, forklift et cetera or on-road equipment such as haul trucks, delivery trucks, and passenger vehicles for construction workers. If a new foundation is not needed, to establish footings or structure supports, some concrete cutting and digging may be necessary in order to re-pour new footings prior to building above the existing foundation. Because the engines are currently operating at existing facilities, the analysis assumes that no more than 2,500 square feet of area would need to be disturbed at a single facility at a given time. Based on previous CEQA analyses conducted for the installation of one SCR system and one ammonia storage tank, the typical equipment that may be needed to complete each construction phase at a single affected facility is presented in Table 4-5. SCR systems associated with engines that will be repowered with stationary gas turbines will be analyzed separately.

Table 4-5
Construction Equipment That May Be Needed to Install One SCR System and One Ammonia Tank at One Facility

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Cranes	1	2
Demolition	Forklift	2	8
Building Construction	Aerial Lifts	1	8
Building Construction	Cranes	1	3
Building Construction	Forklifts	1	6
Building Construction	Generator Sets	1	7
Building Construction	Tractors/Loaders/Backhoes	1	4
Building Construction	Welders	2	7
Paving	Cement and Mortar Mixers	2	6
Paving	Pavers	1	8
Paving	Plate Compactors	1	4
Paving	Rollers	1	4
Paving	Tractors/Loaders/Backhoes	1	8

Construction emissions associated with installing one SCR system and one associated ammonia tank at one facility were estimated using the California Emission Estimator Model (CalEEMod), version 2016.3.2. To estimate what the impacts would be for installing one SCR system and one associated ammonia storage tank, the following general assumptions were made:

- To provide a "worst-case" analysis, each SCR system and associated ammonia storage tank installation will require its own construction crew and equipment. For any facility with multiple engines, the installation of SCR systems and associated ammonia storage tank(s) are assumed to occur in sequential order with the same construction crew and equipment in order to avoid all gas turbines being offline at the same time.

- The three phases are assumed to occur sequentially during a traditional work week (e.g., five days) and each phase is assumed the following number of days: demolition – 10 days; installation of NOx control equipment – 60 days; and paving – five days.

- During construction of each SCR system and ammonia storage tank the following number of round-trip trips would occur from worker trips each day: demolition - 8 trips; installation of SCR system and ammonia tank – 15 trips; and paving – 8 trips. In addition, four on-road hauling trips are estimated to be needed during demolition, seven on-road vendor trips are estimated to be needed during the installation of the SCR system and ammonia storage tank, and one vendor trip per day will be needed during paving.

- Taking into account the lead time needed to complete design and engineering, procure contracts, order equipment and obtain South Coast AQMD permits, construction is expected to begin in year 2020 at the earliest. Further, depending on the facility, construction could span from two months to one year or more if multiple SCR systems and multiple ammonia storage tanks (or one larger ammonia storage tank) will be installed at one facility. The maximum number of SCR systems expected to be installed at one facility is five.

Table 4-6 presents the peak daily emissions from construction activities to install one SCR system and one ammonia storage tank at one facility. There are 15 engines located at six facilities where each engine is assumed to need one SCR system and one ammonia storage tank installed. For the facilities that have more than one gas turbine and thus require more than one SCR system to be installed, it is possible only one ammonia storage tank with a large enough capacity to supply enough ammonia to all of the SCR systems would be needed. Further, for these six facilities, the installations of the SCR systems are assumed to occur sequentially (e.g., one SCR system and one ammonia storage tank at a time) in order to avoid all gas turbines being offline simultaneously and to maintain operations at each facility. PAR 1110.2 provides approximately four years (compliance date of December 31, 2023) for facilities to take the necessary actions in order to achieve compliance, e.g., to construct each SCR system and ammonia or urea storage tank at the seven affected facilities. With a four-year compliance timeframe, construction at these seven facilities would likely be staggered because of the lead time needed to complete design and engineering, procure contracts, order equipment, and obtain South Coast AQMD permits prior to beginning construction. Thus, the analysis assumes that not all seven facilities would begin construction on the exact same day and maintain the exact same schedule. However, it is possible that some facilities may have overlapping construction phases (e.g., Facility 1 would have demolition occurring, while Facility 2 may be conducting site preparation, etc.). Table 4-6 presents the peak daily emissions for the construction of one SCR system and ammonia storage tank at one facility, and the quantity of peak daily construction emissions are less than the South Coast AQMD's air quality significance thresholds for construction. Appendix B contains the CalEEMod output files for the annual, summer, and winter construction emissions for the construction of one SCR system at one facility.

Table 4-6
Peak Daily Emissions from Construction Activities of One SCR System and One Ammonia Storage Tank at One Facility

Peak Daily Construction Emissions	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Installation of 1 SCR and 1 ammonia storage tank	1.4	10.2	9.9	0.0	0.7	0.5
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Repowering of Existing Engine with a Stationary Gas Turbine Utilizing SCR Technology
There are two facilities that plan to repower their engines. One of the facilities currently has four existing stationary gas turbines and six engines. Three of the engines and all four stationary gas turbines will be removed from service and replaced with three stationary gas turbines. Although the repowering of the three engines is within the scope of the stationary gas turbine replacement project, construction impacts associated with the repowering of the three engines will be evaluated in this SEA. The other facility is planning to repower five engines with five stationary gas turbines. The assumptions relied upon for this analysis is as follows:

- The dismantling and demolition process is estimated to take 20 days and then it would require approximately five days of site preparation, 150 days of building construction, and five days of paving, for a total of 180 days.

- 20 workers would be needed to dismantle the existing engine and install the new stationary gas turbine.
- Equipment needed to repower the engine is presented in Table 4-7.
- The footprint of the existing engines is assumed to be approximately 3,000 square feet and the facility operator is assumed to replace the unit with equipment of the same or similar size and footprint.
- To provide a "worst-case" analysis, each engine repower will require its own construction crew and equipment. Since multiple engines are undergoing replacement, the replacements are assumed to occur in sequential order with the same construction crew and equipment in order to avoid all engines being offline at the same time.
- Once the new gas turbine becomes operational, the NOx emissions are expected to be fewer in the new gas turbine relative to the existing engine.
- No additional employees are expected to be needed to operate and maintain the new gas turbine. The required operation and maintenance activities are expected to be similar for the new gas turbine.

Table 4-7
Construction Equipment That May Be Needed to Repower One Engine at One Facility

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Cranes	1	4
Demolition	Rubber Tired Dozers	1	4
Demolition	Forklifts	2	7
Site Preparation	Rubber Tired Dozers	1	7
Site Preparation	Tractors/Loaders/Backhoes	1	4
Site Preparation	Trenchers	1	4
Building Construction	Aerial Lifts	1	4
Building Construction	Cranes	1	4
Building Construction	Forklifts	2	6
Building Construction	Generator Sets	1	8
Building Construction	Welders	2	4
Paving	Cement and Mortar Mixers	1	6
Paving	Pavers	1	5
Paving	Paving Equipment	1	4
Paving	Rollers	1	4
Paving	Tractors/Loaders/Backhoes	1	4

Construction emissions associated with removing engine and replacing it with a stationary gas turbine of comparable size and footprint were estimated using CalEEMod version 2016.3.2. Appendix B contains the detailed construction estimates for replacing one engine with a stationary gas turbine. Table 4-8 summarizes the peak daily construction emissions from replacing an engine with a stationary gas turbine.

Table 4-8
Peak Daily Construction Emissions from Repowering an Engine

Construction Emissions	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Repower 1 Engine	1.5	14.1	9.8	0.0	6.1	3.6
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

As shown in Table 4-8, the construction emissions from the repowering one engine with a stationary gas on a peak day are less than South Coast AQMD's air quality significance thresholds for construction.

Complete Replacement of Existing Engine and Installation of NSCR Catalyst in the OCS

As noted previously, there are six lean burn engines operated in the OCS which would require the installation of SCR technology to achieve the NOx emission limit of PAR 1110.2. However, due to operational limits and space constraints, the facility will likely replace the existing engines. For this SEA, it is assumed that the facility will replace the lean burn engines with rich burn engines and utilize NSCR catalysts to achieve the proposed NOx emissions limit. Replacement of the engine and installation of the NSCR system will require more construction than installing an SCR system and therefore, will likely result in higher peak daily emissions. The decision to completely replace a gas turbine will be based on a number of factors such as age, reliability, high maintenance and operating costs, fuel efficiency issues, and/or the lack of replacement parts. However, it is impossible to predict when this would occur for the affected units, because it is a facility-based decision (e.g., cost, long-term planning, etc.) that is dependent on the status of the unit (e.g., unit operation schedule, unit age, and maintenance of the unit, etc.).

In the event that a facility operator decides to completely replace an existing engine, the following assumptions were made:

- The dismantling and demolition process is estimated to take 10 days, building construction would take about 60 days for each replacement engine and new NSCR unit. The replacement is assumed to be sequential to minimize power disruptions or reductions to the facility's customers during construction.
- Each engine and NSCR unit is assumed to be transported to the facility via barge from the Port of Los Angeles.
- 8 workers would be needed to dismantle the existing engine and 15 would be needed to install the new engine and NSCR unit.
- Equipment needed to replace an engine and install the NSCR system is presented in Table 4-9. Due to space constraints on the platforms, on-site cranes will be used to move equipment during demolition and building construction. All construction equipment and materials would need to be delivered to the facility via barge.
- To provide a "worst-case" analysis, each engine replacement will require its own construction crew and equipment. For any facility with multiple engines undergoing replacement, the replacements are assumed to occur in sequential order with the same

construction crew and equipment in order to avoid all engines being offline at the same time.

- Once the new engines becomes operational, the NOx emissions are expected to be fewer in the new engines relative to the existing engines. Similarly, the fuel efficiency of the new engine will be improved and will likely use less fuel than the existing engines.
- No additional employees are expected to be needed to operate and maintain the new engines. The required operation and maintenance activities are expected to be similar for the new engines.

Table 4-9
Construction Equipment That May Be Needed to Replace One Engine and Install an NSCR System at a Facility in the OCS

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Cranes	2	6
Building Construction	Cranes	2	6
Building Construction	Welders	2	4

Construction emissions associated with removing one engine and replacing it with a new engine of comparable size and footprint were estimated using CalEEMod version 2016.3.2. Appendix B contains the detailed construction estimates for replacing one engine. Table 4-10 summarizes the peak daily construction emissions from replacing an engine with a new engine.

Table 4-10
Peak Daily Construction Emissions from Replacing One Engine and Installing One NSCR Unit

Construction Emissions	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Replacement of 1 Engine and Installation of 1 NSCR Unit (Construction)	1.14	8.05	5.99	0.01	0.55	0.40
Replacement of 1 Engine and Installation of 1 NSCR Unit (Equipment Delivery via Barge)	0.66	5.13	11.14	0.05	0.18	0.18
Daily Peak Construction Emissions	**1.81**	**13.18**	**17.13**	**0.06**	**0.73**	**0.57**
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

As shown in Table 4-10, the construction emissions from the replacement of one engine and installation of the NSCR unit on a peak day are less than South Coast AQMD's air quality significance thresholds for construction.

The existing six engines located in the OCS will likely be replaced new engines equipped with NSCR technology or other NOx reduction control technology that does not utilize ammonia or urea to comply with PAR 1110.2. However, as explained earlier, to minimize disruption at the facility, each replacement is assumed to occur in sequential order with the same construction crew and equipment in order to avoid all engines being offline at the same time.

There may be other facilities that will elect to replace their existing engine(s), but South Coast AQMD staff is unable to predict if there are additional facilities that would choose replacement since there are a variety of factors to be considered. Some facility operators may decide to replace an old engine with a new engine to improve operational efficiency or if the existing engine cannot be retrofitted with a new SCR system. Overall, the decision to replace an existing engine will depend upon cost, the feasibility to install a new SCR system and achieve the NOx emission limits in PAR 1110.2, as well equipment age and size, and the facility's operational needs.

Given the duration of construction that would be needed to replace an existing engine and install an SCR system and ammonia storage tank and the length of time provided to comply with the requirements of PAR 1110.2 (on or before December 31, 2023, approximately four years to achieve compliance), the construction phases for multiple facilities could potentially overlap on a peak day. However, PAR 1100 allows compressor gas engines to meet the emissions limits of PAR 1110.2 24 months after a permit to construct is issued or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021. Of the 15 lean burn engines that are expected to be retrofitted with new SCR systems, 11 are compressor gas engines. All eight engines that are expected to be repowered with stationary gas turbines are also compressor gas engines. Construction of some or all of these stationary engines may occur outside of the four year window which would result in fewer overlapping construction activities and subsequently fewer impacts from construction. As a "worst-case", it is conservatively assumed that all affected stationary engines will be constructed within four years (e.g., by December 31, 2023). Therefore, a peak day is expected to consist of one SCR system and associated ammonia storage tank installation and repowering of an engine with a stationary gas turbine at two facilities for a total of two engine repowers. Overlapping peak daily construction emissions are shown in Table 4-11.

Table 4-11
Overlapping Peak Daily Construction Emissions

Construction Emissions	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Installation of One SCR System and One Ammonia Storage Tank	1.36	10.22	9.90	0.02	0.71	0.54
Repowering of Two Engines with Two Stationary Gas Turbines	3.08	28.27	19.58	0.04	12.15	7.13
Total Overlapping Peak Daily Construction Emissions	**4.44**	**38.49**	**29.48**	**0.06**	**12.86**	**7.67**
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

As shown in Table 4-11, the air quality impacts due to construction from the implementation of PAR 1110.2 are expected to be less than significant.

Project-Specific Air Quality Impacts During Operation

The proposed project is expected to result in direct air quality benefits from the reduction of 0.29 ton per day of NOx emissions by December 31, 2023. Implementation is expected to be achieved through any of the following modifications: 1) modify the existing SCR system or NSCR system; 2) install one new SCR system for one existing lean burn engine that does not have post-combustion air pollution control equipment; 3) repower one existing engine with one stationary gas turbine and install one new SCR system; or 4) replace one existing lean-burn engine operated at a facility located in the OCS with one rich-burn engine and install an NSCR system. Once construction is complete, secondary criteria pollutant emissions may be generated as part of operation activities necessary with operating and maintaining the SCR systems and gas turbines. In particular, the following activities may be sources of secondary criteria pollutant emissions during operation: 1) new vehicle trips via heavy-duty for periodic ammonia/urea deliveries for each SCR system installed; 2) new vehicle trips via heavy-duty trucks for periodic deliveries of fresh catalyst and hauling away spent catalyst the new SCR systems are installed; and 3) increased vehicle trips vial heavy-duty periodic ammonia/urea deliveries for facilities increasing ammonia usage on existing SCR systems with replaced catalyst modules.

The following assumptions were made about the operation of new SCR systems:

- One new ammonia or urea storage tank is assumed to require two one-way truck deliveries of 19 percent aqueous ammonia or 40 percent urea. Ammonia and urea delivery trucks can deliver approximately 6,700 gallons at any one time.
- Each facility with only one new SCR system installed will need at least new ammonia or urea delivery trip per month and the quantity delivered will vary according to the capacity of the ammonia or urea storage tank and monthly usage. For facilities that will have more than one SCR system installed, the analysis assumes that one new large ammonia or urea storage tank will require two one-way truck deliveries of 19 percent aqueous ammonia or 40 percent urea.
- Since the ammonia tanks will be pressurized, no ammonia emissions are expected from filling the storage tanks.
- As a conservative estimate, it is assumed the peak daily trips associated with ammonia/urea deliveries will be one truck per facility for all gas turbines that are equipped with new SCR systems. The delivery distance of one ammonia truck is assumed to be 100 miles round-trip.
- All initial catalyst deliveries are assumed to occur during the construction phase. However, catalyst modules are expected to be replaced once every three years. When spent catalyst removal and replacement becomes necessary, two one-way trucks will be needed to remove the catalyst and two one-way trucks will be needed to deliver the fresh catalyst modules.
- Peak daily trips assume truck trip distances to deliver catalyst would be similar to ammonia and are assumed to be 100 miles round-trip. It is assumed the catalyst delivery vehicles would be similar to the ammonia delivery trucks (heavy-duty).
- No additional employees are anticipated to be needed to operate the new SCR systems because the existing work force per affected facility is expected to be sufficient. As such,

no additional emissions from new workers are anticipated from the operation of the new SCR systems.

- Seven facilities are expected to install new SCR systems with new ammonia/urea deliveries with five of the aforementioned facilities located within one quarter mile of sensitive receptors (e.g., schools, residences, etc.).

- One facility with existing SCR systems are expected to increase their ammonia usage and is located within one quarter mile of sensitive receptors (e.g., schools, residences, etc.).

- One facility in the OCS is expected to replace their existing engines and install NSCR systems. Since the engines operated at the facility currently use oxidation catalysts to control CO and VOC, future NSCR catalyst deliveries will likely coincide with the oxidation catalyst delivery. Further, multiple three-way catalysts may be delivered in one day on the same delivery truck and barge. For this analysis, up to six new catalyst deliveries will be included to account for the "worst-case."

- The projected increase in aqueous ammonia usage will not change the number of aqueous ammonia deliveries occurring on a peak day (e.g., one truck) per facility.

A total of eight facilities will need new ammonia deliveries. Of the eight facilities with SCR systems, one had existing SCR systems and therefore, would not result in new catalyst delivery trips. Secondary operational emissions from these facilities were estimated using EMFAC2017 emission factors and are presented in Table 4-12. Appendix B contains the detailed emissions calculations from the operational activities from the operating the new SCR systems and increase in delivery trucks as a result of increasing ammonia usage for facilities with existing SCR systems as well as new catalyst deliveries.

Table 4-12
Peak Daily Operational Emissions at One Facility

Operational Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Increased Ammonia Delivery Trucks for 1 Facility	0.08	0.52	0.34	0.0	0.03	0.02
New Catalyst Delivery and Spent Catalyst Haul Trip at 1 Facility	0.15	1.04	0.68	0.0	0.07	0.04
Total	**0.23**	**1.56**	**1.01**	**0.01**	**0.1**	**0.06**
Significance Threshold for Operation	55	55	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

As indicated in Table 4-12, operational emissions from one facility as a result in an increase in delivery trucks is below the South Coast AQMD's air quality significance thresholds for operation. Due to the number of affected facilities with eight additional ammonia deliveries, operational emissions may overlap on a peak day. However, in the most conservative assumption, if two facilities were to overlap their scheduled ammonia/urea delivery with a new catalyst delivery to a facility operating in the OCS, air quality impacts from operations are expected to be less than significant as shown in Table 4-13. For the worst case, it is assumed that the overlap will occur with the facility located in the OCS.

Table 4-13
Peak Daily Operational Emissions

Operational Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Increased Ammonia Delivery Trucks for 2 Facilities	0.15	1.04	0.68	0.00	0.07	0.04
New Catalyst Delivery and Spent Catalyst Haul Trip at 1 Facility Located in the OCS[1]	1.34	6.16	11.21	0.09	0.33	0.18
Total	**1.49**	**7.20**	**11.88**	**0.09**	**0.40**	**0.22**
Significance Threshold for Operation	55	55	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

1. Catalyst delivery to the OCS will include a roundtrip for the delivery truck between the vendor and the Port of LA and a roundtrip for the barge between the Port of LA and the platform.

Construction and Operation Overlap Impact

Given the number of affected facilities and the varying modifications expected to occur at each affected facility in order to comply with PAR 1110.2, construction activities at some facilities could potentially overlap with operational activities occurring at other facilities that have completed construction. The overlap could occur during the period from the date of adoption of PAR 1110.2 until December 31, 2023, at which all affected engines are required to meet the NOx emission limits set forth in PAR 1110.2. The peak daily emissions during this overlap period are assumed to occur when one new SCR systems and associated ammonia storage tanks are being installed and two existing engines are being repowered (see Table 4-11). Peak operational emissions are assumed to occur when three facilities receive ammonia deliveries and one facility receives new catalyst and hauls off spent catalyst (see Table 4-13). According to South Coast AQMD policy, in the event that there is an overlap of construction and operation phases, the peak daily emissions from the construction and operation overlap period should be summed and compared to the South Coast AQMD's air quality significance thresholds for operation because the latter are more stringent, and thus, more conservative. As such, total emissions from overlapping construction and operational activities have been compared to the air quality significance thresholds for operation in Table 4-14.

Table 4-14
Peak Daily Overlapping Construction and Operational Emissions

Operational Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Installation of 1 new SCR Systems and 1 new ammonia storage tanks (construction)	1.36	10.22	9.90	0.02	0.71	0.54
Repowering of 2 engines with stationary gas turbines (construction)	3.08	28.27	19.58	0.04	12.15	7.13
Increased Truck Trips for ammonia delivery for 2 facilities (operation)	0.15	1.04	0.68	0.00	0.07	0.04
Increased Truck Trips for New Catalyst Delivery and Hauling Spent Catalyst at 1 Facility in the OCS	1.34	6.16	11.21	0.09	0.33	0.18
Total	5.94	45.69	41.36	0.15	13.27	7.89
Significance Threshold for Operation*	55	55	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

*When construction and operation phases overlap, the operational air quality significance thresholds are applied.

As indicated in Table 4-14, the peak daily emissions during the construction and operational overlap period do not exceed any of the South Coast AQMD's air quality significance thresholds for operation. Therefore, the air quality impacts during the construction and operation overlap period are considered to be less than significant. In conclusion, the proposed project is also not expected to result in significant adverse air quality impacts during the construction and operation overlap period.

SCR systems reduce NOx emissions by using ammonia, which is considered a TAC. Unreacted ammonia emissions generated from these units are referred to as ammonia slip. Ammonia slip is typically limited to five ppm through permit conditions for new SCR installations. Based on the December 2015 Final Program Environmental Analysis for Proposed Amended Regulation XX - RECLAIM[21] the concentration at a receptor located 25 meters from a stack would be much less than one percent of the concentration at the release from the exit of the stack. Thus, the peak concentration of ammonia at a receptor located 25 meters from a stack is calculated by assuming a dispersion of one percent. While ammonia does not have an OEHHA approved cancer potency value, it does have non-carcinogenic chronic (200 µg/m^3) and acute (3,200 µg/m^3) reference exposure levels (RELs). Table 4-15 summarizes the calculated non-carcinogenic chronic and acute hazard indices for ammonia and compared these values to the respective significance thresholds

[21] South Coast AQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX -RECLAIM, December 2015. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf

for engines with an ammonia slip limit of five ppmv and stationary compressor gas turbines with an ammonia slip limit of 10 ppmv; both were shown to be less than significant.

Table 4-15
Health Risk from the Facilities Using Ammonia or Urea

Ammonia Slip Concentration at the Exit of the Stack (ppm)	**Peak Concentration at a Receptor 25 m from the Stack** ($\mu g/m^3$)	**Acute REL** ($\mu g/m^3$)	**Chronic REL** ($\mu g/m^3$)	**Acute Hazard Index**	**Chronic Hazard Index**
5	35	3,200	200	**0.01**	**0.17**
10[1]	70	3,200	200	**0.02**	**0.35**
			Significance Threshold	**1.0**	**1.0**
		Exceed Significance?		**NO**	**NO**

1. Stationary engines operated at RECLAIM and former-RECLAIM facilities have an ammonia slip limit of 5 ppmv. Two of the facilities are expected to repower their compressor gas engines with stationary compressor gas turbines which will be subject to Rule 1134 and have an ammonia slip limit of 10 ppmv at 15 percent oxygen on a dry basis.

Even if multiple SCR systems are installed at one facility, the locations of all the stacks would generally not be situated in the same place within the affected facility's property. For a facility with space limitations and multiple SCR installations, the exhaust could be routed to one stack which would still be limited to five ppm ammonia slip. Nevertheless, even with multiple SCR system installations, the acute and chronic hazard indices would not be expected to exceed the significance threshold.

PM Impacts from Ammonia Usage

In an SCR system, the ammonia or urea is injected into the flue gas stream and reacts with NOx to form elemental nitrogen (N2) and water in the cleaned exhaust gas. A small amount of unreacted ammonia (ammonia slip) may pass through. The South Coast AQMD through permit conditions limits ammonia slip to five ppm. In the December 2015 Final Program EA for NOx RECLAIM[22], South Coast AQMD staff conducted a series of regional simulations to determine the impacts of reducing NOx while increasing the potential for creating ammonia slip due to increased use of ammonia needed for the operation of SCR systems. In the analysis, 14 tons per day of NOx emission reductions at RECLAIM facilities were estimated while ammonia slip emissions from the same facilities would increase by 1.63 ton per day. The simulations were run for the 2021 draft baseline emissions inventory to estimate what the impacts would be at full implementation of the 14 tons per day decrease in NOx emissions. The effect of decreasing 14 tons per day of NOx would result in a decrease of annual PM2.5 of approximately 0.7 $\mu g/m^3$. However, since the usage of ammonia is necessary to achieve the NOx emission reductions (via SCR technology), the ammonia usage would cause a concurrent increase in annual PM2.5 of approximately 0.6 $\mu g/m^3$. Thus, increasing the amount of ammonia slip would result in a net average 0.1 $\mu g/m^3$decrease in annual PM2.5. Further, the simulations showed that there would be no change in ozone levels compared to what would occur if there was no increase in ammonia slip. The overall decrease in annual PM2.5 would occur provided that all 14 tons per day of NOx emissions would be reduced, which

[22] South Coast AQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX -RECLAIM, December 2015. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf

in turn would reduce PM2.5 emissions overall, even if some PM2.5 emissions are generated from ammonia slip. In summary, the impacts to regional PM2.5 and ozone due to increased ammonia slip in these simulations was concluded to not create a significant adverse impact. Because this proposed project would have substantially less ammonia slip emissions than what was analyzed in the regional simulations, the impacts to regional PM2.5 and ozone due to increased ammonia slip from PAR 1110.2 would not create a significant adverse air quality impact.

Odor Impacts

During construction, there will be odors associated with the operation of diesel-fueled off-road construction equipment used to install the new SCR systems, replace catalyst modules in existing SCR systems and to replace existing engines. In addition, diesel-fueled on-road vehicles may be utilized during both construction and operation activities at the facilities and these vehicles will be required to use diesel fuel with a low sulfur content (e.g., 15 ppm by weight or less in accordance with South Coast AQMD Rule 431.2 - Sulfur Content of Liquid Fuels). Further, as explained earlier, the use of diesel-fueled trucks as part of construction and operation activities will not be allowed to idle longer than five minutes onsite, so lingering odors would not be expected from these vehicles. Finally, because of the relatively small number of pieces of diesel-fueled on- and off-road equipment being utilized at any one site and because construction will only be short-term, odor impacts are not expected to be significant.

Once the new SCR systems are installed and operational and the existing SCR systems have their catalyst modules replaced, the amount of ammonia used by these systems will increase. However, PAR 1110.2 contains an ammonia slip limit of five ppm to prevent the over-injection of excess ammonia. The stationary gas turbines that are replacing the internal combustion engines at two facilities are subject to Rule 1134 which has an ammonia slip limit of 10 ppm. Because the exhaust gases from the engines are hot, any ammonia slip emissions from operating a SCR would be quite buoyant and would rapidly rise to higher altitudes without any possibility of lingering at ground level. The odor threshold of ammonia can range from one to five ppm, but because of the buoyancy of ammonia emissions combined with an average prevailing wind velocity of six miles per hour in the Basin, it is unlikely that ammonia slip emissions would exceed the ammonia odor threshold during operation.

The replacement engines are expected to be the same size as the existing engines and therefore are not expected to cause any additional odors. Since the replacement engines are newer and more gas efficient, there is potentially fewer odors due to a decrease in fuel usage.

Greenhouse Gas Impacts

Significant changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth's surface, attributed to accumulation of GHG emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn heats the surface of the Earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities. The emission of GHGs through the combustion of fossil fuels (i.e., fuels containing carbon) in conjunction with other human activities, appears to be closely associated with global warming. State law defines GHG to include the following: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6) (Health and Safety Code Section 38505(g)). The most common GHG that results from human activity is CO2, followed by CH4 and N2O.

Traditionally, GHGs and other global warming pollutants are perceived as solely global in their impacts and that increasing emissions anywhere in the world contributes to climate change anywhere in the world. A study conducted on the health impacts of CO2 "domes" that form over urban areas cause increases in local temperatures and local criteria pollutants, which have adverse health effects[23].

The analysis of GHGs is a different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, the significance thresholds are based on daily emissions because attainment or non-attainment is primarily based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short-term exposure effects on human health (e.g., one-hour and eight-hour standards). Since the half-life of CO2 is approximately 100 years, for example, the effects of GHGs occur over a longer term which means they affect the global climate over a relatively long-time frame. As a result, the South Coast AQMD's current position is to evaluate the effects of GHGs over a longer timeframe than a single day (i.e., annual emissions). GHG emissions are typically considered to be cumulative impacts because they contribute to global climate effects. GHG emission impacts from implementing the proposed project were calculated at the project-specific level during construction and operation. For example, installation of NOx control equipment has the potential to increase the use of electricity, fuel, and water and the generation of wastewater which will in turn increase CO2 emissions.

The South Coast AQMD convened a "Greenhouse Gas CEQA Significance Threshold Working Group" to consider a variety of benchmarks and potential significance thresholds to evaluate GHG impacts. On December 5, 2008, the South Coast AQMD adopted an interim CEQA GHG Significance Threshold for projects where South Coast AQMD is the lead agency (South Coast AQMD, 2008). This interim threshold is set at 10,000 metric tons of CO2 equivalent emissions (MTCO2eq) per year. The South Coast AQMD prepared a "Draft Guidance Document – Interim CEQA GHG Significance Thresholds" that outlined the approved tiered approach to determine GHG significance of projects (South Coast AQMD, 2008, pg. 3-10). The first two tiers involve: 1) exempting the project because of potential reductions of GHG emissions allowed under CEQA; and, 2) demonstrating that the project's GHG emissions are consistent with a local general plan. Tier 3 proposes a limit of 10,000 MTCO2eq per year as the incremental increase representing a significance threshold for projects where South Coast AQMD is the lead agency (South Coast AQMD, 2008, pg. 3-11). Tier 4 (performance standards) is yet to be developed. Tier 5 allows offsets that would reduce the GHG impacts to below the Tier 3 brightline threshold. Projects with incremental increases below this threshold will not be cumulatively considerable.

As indicated in Chapter 3, combustion processes generate GHG emissions in addition to criteria pollutants. The following analysis mainly focuses on directly emitted CO2 because this is the primary GHG pollutant emitted during the combustion process and is the GHG pollutant for which emission factors are most readily available. Modification of existing air pollution control systems and the installation of new air pollution control system does not affect the combustion process of the existing engine. In addition, engines that will be replaced or repowered are expected to be replaced with equipment of rating. Therefore, an increase in GHG emissions from combustion of fuel is not expected from affected engines that are retrofitted, replaced, or repowered.

[23] Jacobsen, Mark Z. "Enhancement of Local Air Pollution by Urban CO2 Domes," Environmental Science and Technology, as describe in Stanford University press release on March 16, 2010 available at: http://news.stanford.edu/news/2010/march/urban-carbon-domes-031610.html

Installation of NOx control equipment as part of implementing the proposed project is expected to generate construction-related CO2 emissions. In addition, based on the type and size of equipment affected by the proposed project, CO2 emissions from the operation of the NOx control equipment are likely to increase from current levels due to using electricity, fuel and water and generating more wastewater. The proposed project will also result in an increase of GHG operational emissions produced from additional truck hauling and deliveries necessary to accommodate the additional solid waste generation and increased use of chemicals and supplies. Direct GHG emissions from construction equipment, mobile sources, and indirect GHG emissions from electricity usage during construction of the potential engine retrofits, replacements, and repower were estimated in CalEEMod. Operational GHG emissions from mobile sources such as ammonia delivery trips and catalyst delivery and hauling trips were estimated based on the

For the purposes of addressing the potential GHG impacts of the proposed project, the overall impacts of CO2e emissions from the project were estimated and evaluated from the earliest possible initial implementation of the proposed project with construction beginning in 2020. Once the proposed project is fully implemented, the potential NOx emission reductions would continue through the end of the useful life of the equipment. The analysis estimated CO2e emissions from all sources subject to the proposed project (construction and operation) from the time construction is expected to commence (January 1, 2020) the end of the project (December 31, 2023). The beginning of the proposed project was assumed to be no sooner than 2020, since installing NOx control equipment takes considerable advance planning and engineering. The proposed project is expected to achieve 0.29 ton per day of the NOx emission reduction, such that any installed or modified NOx controls could be constructed and operational by December 31, 2023. However, compressor gas engines have an effective compliance date of two years after a permit to construct is issued or three years after a permit to construct is issued if the permit application is submitted before July 1, 2012. Thus, once construction is complete and the equipment is operational, CO2e emissions will remain constant.

Approximately 15 new SCR systems and associated ammonia storage tanks, six SCR system modifications, ten NSCR modifications, eight engine repowers, and six engine replacements are expected as a result of the implementation of PAR 1110.2. Also, eight facilities will need new or additional ammonia deliveries. Each facility is expected to need one additional deliveries per month for a total of 96 ammonia deliveries per year. Additionally, SCR catalysts will need to be replaced. For GHG emission estimates, it is conservatively assumed that 29 additional catalyst deliveries will occur per year for the 23 new SCR systems and 6 new NSCR systems and 29 truck trips to remove spent catalyst. Additionally, since the six engines with NSCR will be installed at a facility located in the OCS, six barge roundtrips per year is included in the analysis. The total increased truck trips per year is therefore 154 truck trips and 12 barge trips. GHG Emissions from construction activities were estimated using CalEEMod version 2016.3.2 and GHG emissions from operational activities were estimated based on EMFAC2017 factors for heavy duty trucks. Emissions from the barge are estimated using Appendix B contains CalEEMod files for construction emissions and Appendix C contains detailed calculations for operational emissions. As summarized in Table 4-16, implementation of PAR 1110.2 may result in the generation of 80.5 amortized metric tons of CO2e emissions during construction and 91.2 metric tons of CO2e emissions from mobile sources during operation.

Table 4-16
GHG Emissions from the Proposed Project

Activity	**CO2** (MT/year[a])
Construction[b] – 15 SCR systems and associated ammonia storage tanks, 6 engine replacements with new engine and SCR system, 16 SCR or NSCR system modifications, 8 engine replacements with stationary gas turbines and new SCR system and associated ammonia storage tank	80.5
Operation – On-road vehicles	91.2
Total GHG	171.7
Significance Threshold	10,000
Exceed Significance?	**NO**

a. 1 metric ton = 2,205 pounds
b. GHGs from short-term construction activities are amortized over 30 years

As summarized in Table 4-16, GHG emissions from the installation of new SCR systems and the replacement of SCR and NSCR catalyst modules and existing engines were quantified by applying the same assumptions used to quantify the criteria pollutant emissions. The only exception is that the construction GHG emissions were amortized over a 30-year project life in accordance with the guidance provided in the Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans[24] that was adopted by the South Coast AQMD Governing Board in December 2008.

Thus, as shown in Table 4-16, total GHG emissions are 171.7 metric tons per year, which is below the South Coast AQMD's GHG significance threshold for industrial sources. For this reason, implementing the proposed project is not expected to generate significant adverse cumulative GHG air quality impacts. Further, PAR 1110.2 is not expected to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG gases.

PROJECT-SPECIFIC IMPACTS – CONCLUSION: Based on the preceding analysis, the overall conclusion is that air quality and GHG impacts for the proposed project are less than significant during construction, during construction overlapping with operation, and during operation.

PROJECT-SPECIFIC MITIGATION MEASURES: The analysis indicates that air quality impacts during the construction and operational phase are less than significant. Additionally, there will be an overall reduction in NOx emissions during the operational phase of the proposed project. Thus, because there are no significant adverse air quality impacts as a result of the proposed project, no air quality mitigation measures are required.

REMAINING IMPACTS: The air quality analysis concluded that potential construction and operational air quality impacts would be less than significant, no mitigation measures were required; thus, air quality impacts remain less than significant.

[24] Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf

CUMULATIVE IMPACTS: The preceding analysis concluded that air quality impacts from construction and operational activities would be less than significant as a result of implementing the proposed project. Thus, the air quality impacts due to construction and operation are not considered to be cumulatively considerable pursuant to CEQA Guidelines Section 15064(h)(1) and therefore, there are no significant adverse cumulative air quality impacts. Further, it should be noted that the air quality analysis is a conservative, "worst case" analysis so the actual construction and operational impacts are not expected to be as great as estimated in this SEA. Additionally, the construction activities are temporary when compared to the permanent project long-term emission reductions of NOx as a result of the proposed project. Even though the proposed project will cause a temporary, less than significant increase in air emissions during the construction and operation phase, the temporary net increase in construction emissions combined with the total permanent emission reductions projected overall during operation would not interfere with the expected overall NOx reductions as part of the proposed project. For example, an increase in NOx emissions during the construction and operation overlap period is expected to result in approximately 46 pounds of NOx per day as indicated in Table 4-14; however, the proposed project is expected to result in NOx emission reductions of 0.29 ton per day (580 pounds per day) after implementation of BARCT limits. Further, as facilities complete modifications to their existing stationary engines to comply with PAR 1110.2, the incremental NOx emission reductions that are expected to occur would offset the NOx emissions generated during construction. NOx emission reductions for each facility and engine after implementation are provided in Appendix F.

Also, implementing control measure CMB-05 contained in the 2016 AQMP, in addition to the air quality benefits of existing and proposed South Coast AQMD rules, is anticipated to bring the South Coast AQMD 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 and previous amendments considered together, are not expected to be significant because implementation of the proposed project is expected to result in net emission reductions and overall air quality improvement. Therefore, there will be no significant cumulative adverse operational air quality impacts from implementing the proposed project.

Though the proposed project involves combustion processes which could generate GHG emissions such as CO2, CH4, and N2O, the proposed project does not affect equipment or operations that have the potential to emit other GHGs such as SF6, HFCs or PFCs. Relative to GHGs, implementing the proposed project is not expected to increase GHG emissions that exceed the South Coast AQMD's GHG significance threshold. In addition, implementing the proposed project is expected to generate less than significant adverse cumulative GHG air quality impacts.

HAZARDS AND HAZARDOUS MATERIALS IMPACTS

Significance Criteria

The impacts associated with hazards and hazardous materials will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

PROJECT-SPECIFIC IMPACTS - HAZARD ANALYSIS:
The hazards and hazardous materials analysis for the proposed project focuses on the transport, storage, and handling of aqueous ammonia used in the SCR system process. To minimize the hazards associated with using aqueous ammonia, it is the policy of the South Coast AQMD to require the use of 19 percent by volume aqueous ammonia in air pollution control equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and 2) 19 percent aqueous ammonia is not on any acutely hazardous materials lists unlike anhydrous ammonia or aqueous ammonia at higher percentages. As such, South Coast AQMD staff does not issue permits for the use of anhydrous ammonia or aqueous ammonia in concentrations higher than 19 percent by volume for use in SCR systems. As a result, this analysis focuses on the use of 19 percent by volume aqueous ammonia. The only exception to this assumption is the scenario analyzed under the "Ammonia Gas Release" subsection.

Six facilities utilizing SCR systems requiring either ammonia or urea injection are located within 1,000 feet or one-quarter mile of a sensitive receptor, including individuals at hospitals, nursing facilities, daycare centers, schools, and elderly intensive care facilities, as well as residential and off-site occupational areas. Therefore, the potential for significant adverse impacts from hazardous emissions onsite or the handling of acutely hazardous materials, substances and wastes on sensitive receptors is expected from the proposed project as further explained in the following discussion.

The facilities affected by the proposed project are expected to be located within urbanized industrial or commercial/mixed use areas. Some are located within two miles of an airport as noted in Appendix D. Some sites affected by the proposed project may also be identified on lists compiled by the California DTSC per Government Code Section 65962.5. These sites are also identified in Appendix D. The proposed project is not expected to interfere with existing hazardous waste management programs since facilities that currently handle hazardous waste would be expected to continue to manage any and all hazardous materials and hazardous waste, in accordance with applicable federal, state, and local rules and regulations.

The analysis of hazard impacts can rely on information from past similar projects (i.e., installing new, or retrofitting existing equipment with an SCR system to comply with South Coast AQMD rules and regulations and installation of associated ammonia storage tanks) where the South Coast AQMD was the lead agency responsible for preparing an environmental analysis pursuant to CEQA. To the extent that future projects to install SCR and associated ammonia storage equipment conform to the ammonia hazard analysis in this SEA, no further hazard analysis may be necessary. If site-specific characteristics are involved with future SCR projects that are outside the scope of this analysis, further ammonia hazards analysis may be warranted.

The onsite storage and handling of the ammonia creates the possibility of an accidental spill and release of aqueous ammonia, which could evaporate and present a potential offsite public and sensitive receptor exposure. Since ammonia is not typically considered to be a flammable compound, other types of heat-related hazard impacts such as fires, explosions, boiling liquid – expanding vapor explosion (BLEVE) are not expected to occur and, therefore, will not be evaluated as part of this hazards analysis. To further evaluate the potential for significant adverse environmental impacts due to an accidental release of aqueous ammonia, various scenarios were evaluated that could occur during the onsite storage, transportation, and transfer of ammonia. These scenarios and their consequences are discussed in detail below.

Hazard Safety Regulations

In spite of implementing modifications to comply with the proposed project, operators of each affected facility must comply or continue to comply with various regulations, including OSHA regulations (29 CFR Part 1910) that require the preparation of a fire prevention plan, and 20 CFR Part 1910 and CCR Title 8 that require prevention programs to protect workers who handle toxic, flammable, reactive, or explosive materials. In addition, Section 112 (r) of the Federal Clean Air Act Amendments of 1990 [42 USC 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop RMPs to prevent accidental releases of these substances. If any of the affected facilities has already prepared an RMP, it may need to be revised to incorporate the changes associated with the proposed project. The Hazardous Materials Transportation Act is the federal legislation that regulates transportation of hazardous materials.

Because operators of affected facilities are required to comply with all applicable design codes and regulations, conform to National Fire Protection Association standards, and conform to policies and procedures concerning leak detection containment and fire protection, no significant adverse compliance impacts are expected.

Impacts on Water Quality

A spill of any hazardous material such as aqueous ammonia that is used and stored at any of the affected facilities could occur under upset conditions such as an earthquake, tank rupture, or tank overflow. Spills could also occur from corrosion of containers, piping and process equipment; and leaks from seals or gaskets at pumps and flanges. A major earthquake would be a potential cause of a large spill. Other causes could include human or mechanical error. Construction of the vessels and foundations in accordance with the Uniform Building Code Zone 4 requirements helps structures to resist major earthquakes without collapse, but may result in some structural and non-structural damage following a major earthquake. Any facility with storage tanks on-site are currently required to have emergency spill containment equipment and would implement spill control measures in the event of an earthquake. Storage tanks typically have secondary containment such as a berm which would be capable of containing 110 percent of the contents of the storage tanks. Therefore, should a rupture occur, the contents of the tank would be collected within the containment system and pumped to an appropriate storage tank.

Spills at the affected facilities would generally be collected within containment areas. Large spills outside of containment areas at the affected facilities are expected to be captured by the process water system where they could be collected and controlled. Spilled material would be collected and pumped to an appropriate tank or sent off-site if the materials cannot be used on-site. Because of the containment system design, spills are not expected to migrate from the spill site and as such, potential adverse water quality hazard impacts are considered to be less than significant.

Transportation Release

It is expected that the affected facilities utilizing SCR technology will receive ammonia from a local ammonia supplier located in the greater Los Angeles area. Deliveries of aqueous ammonia would be made by tanker truck via public roads. The maximum capacity of an ammonia tanker truck is approximately 6,700 gallons. The estimated ammonia use and storage needed to meet the NOx emission limits for PAR 1110.2 are shown in Appendix E. The "worst-case" assumption for delivery frequency from a supplier would be to deliver one ammonia tanker truck to fill one 10,000-gallon tank of ammonia at a facility (Facility A). When comparing the proposed project to what was analyzed in the following Transportation Release Scenarios, the "worst-case" for PAR 1110.2 would result in eight additional ammonia deliveries in a month compared to the six in Scenario 1. As discussed in the following section for Scenario 1, the estimated accident rate associated with transporting aqueous ammonia for the ConocoPhillips project is 0.00101, or about one accident every 992 years. Using the same calculation methodology, the estimated accident rate for the proposed project would be 0.00134, or about one accident every 744 years. Further, the maximum capacity of the storage tank evaluated in the proposed project is 5,000 gallons which is less than the tank capacity in Scenario 2, resulting in fewer impacts than Scenario 2. For both scenarios, the potential impacts from transportation release are expected to be less than significant. Thus, the potential impacts from a transportation release as a result of PAR 1110.2 would also be less than significant. Regulations for the transport of hazardous materials by public highway are described in 49 CFR Sections 173 and 177.

Transportation Release Scenario 1:

To evaluate the hazard impacts from an accidental release of ammonia during ammonia transport, this analysis uses as a surrogate the project at the ConocoPhillips Carson Refinery in which SCR system was installed on boiler #10 and an associated 10,000 gallon ammonia storage tank was constructed (Final Negative Declaration for: ConocoPhillips Los Angeles Refinery Carson Plant SCR Unit Project, SCH. No. 2004011066, South Coast AQMD 2004). This project required approximately six additional ammonia truck transport trips per month. Although truck transport of aqueous ammonia and other hazardous materials is regulated for safety by the U.S. Department of Transportation, there is a possibility that a tanker truck could be involved in an accident that would cause its contents to spill. The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition, driver training, and weather. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality.

Every time hazardous materials are moved from the site of generation, opportunities are provided for an accidental (unintentional) release. A study conducted by the U.S. EPA indicates that the expected number of hazardous materials spills per mile shipped ranges from one in 100 million to one in one million, depending on the type of road and transport vehicle used. The U.S. EPA analyzed accident and traffic volume data from New Jersey, California, and Texas, using the Resource Conservation and Recovery Act Risk/Cost Analysis Model and calculated the accident involvement rates presented in Table 4-17. This information was summarized from the Los Angeles County Hazardous Waste Management Plan (Los Angeles County, 1988).

In the study completed by the U.S. EPA, cylinders, cans, glass, plastic, fiber boxes, tanks, metal drum/parts, and open metal containers were identified as usual container types. For each container type, the expected fractional release en route was calculated. The study concluded that the release rate for tank trucks is much lower than for any other container type (Los Angeles County, 1988).

Table 4-17
Truck Accident Rates for Cargo on Highways

Highway Type	Accidents Per 1,000,000 miles
Interstate	0.13
U.S. and State Highways	0.45
Urban Roadways	0.73
Composite*	0.28

Source: U.S. EPA, 1984.
*Note: Average number for transport on interstates, highways, and urban roadways.

The accident rates developed based on transportation in California were used to predict the accident rate associated with trucks transporting aqueous ammonia to the facility. Assuming an average truck accident rate of 0.28 accidents per million miles traveled (Los Angeles County, 1988), the estimated accident rate associated with transporting aqueous ammonia for the ConocoPhillips project is 0.00101, or about one accident every 992 years.

The actual occurrence of an accidental release of a hazardous material cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and sensitive populations into account.

The hazards associated with the transport of regulated hazardous materials (CCR Title 19, Division 2, Chapter 4.5 or the California Accidental Release Prevention Program requirements), including aqueous ammonia, would include the potential exposure of numerous individuals in the event of an accident that would lead to a spill. Factors such as amount transported, wind speed, ambient temperatures, route traveled, distance to sensitive receptors are considered when determining the consequence of a hazardous material spill.

In the unlikely event that the tanker truck would rupture and release the entire 6,700 gallons of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent evaporative emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. In a typical release scenario, because of the characteristics of most roadways, the pooling effect on an impervious surface would not typically occur. As a result, the spilled ammonia would not be expected to evaporate into a toxic cloud at concentrations that could significantly adversely affect residences or other sensitive receptors in the area of the spill.

Based on the low probability of an ammonia tanker truck accident with a major release and the potential for exposure to low concentrations, if any, the conclusion of this analysis is that potential impacts due to accidental release of ammonia during this transportation scenario are less than significant.

Transportation Release Scenario 2:
This transportation release scenario uses as a surrogate analysis a project at the BP Carson refinery in which SCR system was retrofitted onto an existing fluid catalytic cracking unit (FCCU) and an associated 12,660 gallon ammonia storage tank was constructed (Final Negative Declaration for:

BP Carson Refinery Fluid Catalytic Cracking Unit NOx Reduction Project: SCH No. 2002021068; South Coast AQMD, 2002). The following summarizes the ammonia transport analysis for the BP Carson Refinery FCCU project.

The temperature of the ammonia released was estimated as follows. For a delivery truck traveling from a non-desert area and taking into consideration the convective heat transfer from the tanker as it travels at highway speeds, the bulk temperature should be typical of the originating location (July average temperatures for Los Angeles, with no convective heat losses, would typically be 69 °F). To be conservative for purpose of this analysis, the tanker bulk temperature was assumed to be 77 °F.

The proposed project was estimated to require approximately 35 tanker truck deliveries of aqueous ammonia during the first year of operation (two deliveries after construction to fill the tank plus one delivery every 11 days to replenish the tank during operations). Truck accident rates are approximately one in 8.7-million miles (ENSR, 1994). Based upon the projected 35 ammonia deliveries the first year, and a distance of 30 miles from the supplier to the facility, the number of truck-miles associated with the transport of aqueous ammonia is 1,050 truck-miles per year. The expected number of truck accidents associated with the proposed BP Carson project is therefore approximately once every 8,300 years. The likelihood of any release in a transportation accident is 1 in 10, and that of a large release in a transportation accident is 1 in 40 (ENSR, 1994). The likelihood of a major transportation release after the project is constructed is therefore approximately once per 330,000 years (8,300 times 40). The probability of a transportation accident that would pose a significant risk to the public is therefore insignificant.

In the unlikely event that a major release occurred during a tanker truck accident, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. Roads are usually graded and channeled to prevent water accumulation, and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent toxic emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. Without this pooling effect on an impervious surface, the spilled ammonia would not evaporate into a toxic cloud and impact residences or other sensitive receptors in the area of the spill. Therefore, potential impacts due to accidental release of ammonia during this transportation scenario are less than significant.

Ammonia Tank Rupture

To analyze the effects of aqueous ammonia as a result of an accidental release due to tank rupture, a Consequence Analysis using the U.S. EPA RMP*Comp (Version 1.07) is typically performed. South Coast AQMD staff estimated that the largest aqueous ammonia tank that would be installed as a result of implementing PAR 1110.2 would be 5,000 gallons at one facility. The facilities that were identified as installing SCR systems and the associated ammonia storage tanks were estimated to need storage tanks with a capacity from 250 to 5,000 gallons. Seven facilities were each assumed to install at least one new SCR system and one new ammonia storage tank. Of these seven facilities, five are located within one-quarter mile of sensitive receptors. As summarized in Table 4-18, one facility would require the installation of six new SCR systems, two facilities would require the installation of five new SCR systems at each facility, one facility would require the installation of three SCR systems, one facility would require the installation of two SCR systems, and two facilities would only install one new SCR system per facility. The analysis assumed that each facility would install one large aqueous ammonia storage tank with enough capacity to service all of their new SCR systems.

Table 4-18
Number of New SCR Systems and Affected Facilities

	Number of SCR Systems to be Installed at Each Facility	Number of Affected Facilities
	6	1
	5	2
	3	1
	2	1
	1	2
Total	**23**	**7**

Although it is South Coast AQMD policy to reduce potential hazards associated with ammonia by requiring a permit condition that limits the aqueous ammonia concentration to 19 percent, the CalARP model only has the capability of evaluating the hazard potential of 20 percent aqueous ammonia. Therefore, the potential adverse impacts from aqueous ammonia were evaluated based on the 20 percent aqueous ammonia. Further, since it is assumed that an aqueous ammonia tank servicing one or more SCR systems would need to be relatively near to the existing equipment, the toxic endpoint for aqueous ammonia from a catastrophic failure of a storage tank would significantly adversely affect the sensitive receptors within 0.1 mile of the existing equipment.

A hazard analysis is dependent on knowing the exact location of the hazard within the site (e.g., location of the ammonia storage tank(s)), meteorological conditions, location of the receptor, et cetera, a site-specific hazard analysis is difficult to conduct without this information. Since South Coast AQMD staff does not currently know the exact location of the ammonia storage tanks that would be installed in the future, to estimate a worst-case analysis, the following assumptions were made:

- Location of tanks: Edge of property line, near (i.e., less than ¼-mile) existing residences or sensitive receptors
- Liquid Temperature: 77 °F
- Mitigation Measures: None

Appendix E shows the estimated distance to the toxic endpoint for each facility using the estimated tank size needed for enough aqueous ammonia to reduce the facility's emissions to the NOx limits. The largest tank expected to be installed at a facility is 5,000 gallons. However, the tank can only hold about 67 percent of its capacity at any one time which in this case is 6,700 gallons of aqueous ammonia. Facility A is expected to need one 1,500 gallon tank which will be sited adjacent to a sensitive receptor; Facility A is considered to be the "worst case" for determining offsite consequence in the event of an ammonia release. It is important to note that there are facilities that have existing ammonia storage tanks; however, since these tanks are existing, there is no increase in the amount of ammonia that will be stored at the facility at any one time. Five facilities have sensitive receptors that are located directly across or adjacent to the facilities within the toxic endpoint distance; thus, the hazards and hazardous materials impacts due to tank rupture will be potentially significant. In addition, if mitigation measures (e.g., a secondary containment (dikes and/or berms), installation of grating-covered trench around the perimeter, and tertiary containment) were to occur, the toxic endpoint distance for some facilities would be less than 0.1 miles or 528 feet and the hazards and hazardous materials impacts would continue to be potentially significant due to the vicinity of the sensitive receptors relative to the location of the affected equipment. Therefore, the proposed project has the potential to generate significant adverse hazard impacts as a result of the potential for accidental releases of aqueous ammonia.

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.

PROJECT-SPECIFIC IMPACTS – CONCLUSION: Based on the preceding description of hazards and hazardous materials impacts, the proposed project is not expected to generate significant adverse impacts related to the transport of ammonia. However, because the affected facilities are located within ¼-mile of a sensitive receptor, implementation of the proposed project is expected to generate significant adverse impacts related to the potential for a rupture of an aqueous ammonia storage tank. The overall conclusion is that hazards and hazardous materials impacts for the proposed project are significant.

PROJECT-SPECIFIC MITIGATION MEASURES: Facilities retrofitting units with SCR systems and the accompanying ammonia storage tank will need to submit permit applications to modify their equipment. Thus, South Coast AQMD staff will conduct a CEQA evaluation of the facility-specific project to determine if the project is covered by the analysis in this Revised Draft SEA. If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize the significant adverse impacts (CEQA Guidelines Section 15126.4). Therefore, feasible mitigation measures to reduce the risk of an offsite consequence to nearby sensitive receptors are necessary.

The following mitigation measures are required for any facility whose operators choose to install a new aqueous ammonia storage tank and the offsite consequence analysis indicates that sensitive receptors will be located within the toxic endpoint distance. In addition, these mitigation measures will be included in a mitigation monitoring and reporting plan as part of issuing South Coast AQMD permits to construct for the facility-specific project. These mitigation measures will be enforceable by South Coast AQMD personnel.

HZ-1 Require the use of aqueous ammonia at concentrations less than 20 percent by volume.

HZ-2 Install safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves.

HZ-3 Install secondary containment such as dikes and/or berms to capture 110 percent of the storage tank volume in the event of a spill.

HZ-4 Install a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage tank.

HZ-5 Equip the truck loading/unloading area with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to minimize the offsite hazards impacts to the maximum extent feasible in the event of an accidental release during transfer of aqueous ammonia.

HZ-6 Install tertiary containment that is capable of evacuating 110 percent of the storage tank volume from the secondary containment area.

Implementing Mitigation Measures HZ-1 through HZ-6 would be expected to prevent a catastrophic release of ammonia from leaving the facility property and exposing offsite sensitive receptors; however, as an abundance of caution, due to the anticipated number of affected facilities and without detailed information specific to each facility's layout and plan of action for compliance, the overall conclusion is that hazards and hazardous materials impacts for the proposed project are significant.

REMAINING IMPACTS: Although the aforementioned mitigation measures, if employed, would reduce the hazards and hazardous materials impacts from aqueous ammonia, they are not expected to reduce impacts to less than significant. Therefore, the remaining hazardous and hazardous materials impacts from exposure to the ERPG 2 level of 0.14 milligrams per liter (mg/l) of aqueous ammonia due to tank rupture are considered to be significant after mitigation.

CUMULATIVE IMPACTS: As noted in previous discussions, the accidental release of aqueous ammonia during transport is not expected to result in exposures to ammonia exceeding the ERPG 2 level. However, because the sensitive receptors are closer than 0.1 mile for several facilities, an accidental release of ammonia onsite, either during unloading from a truck or an accidental release in the event of storage tank failure is considered significant. Mitigation measures were identified, but it was concluded that they could not reduce hazard impacts from project-specific releases of ammonia to less than significant.

Adverse impacts from an accidental release of aqueous ammonia are localized impacts (i.e., the impacts are isolated to the area around the affected facility). However, to the extent that affected facilities are located near other facilities that have hazardous materials risks, the cumulative adverse hazard impacts from this project could contribute to existing nearby hazard risks from other projects. Therefore, cumulative hazard risks from implementing the proposed project are considered to be significant.

CUMULATIVE IMPACT MITIGATION: Because the project-specific hazards and hazardous materials impacts are considered to be cumulatively considerable for ammonia storage, cumulative mitigation measures for hazards and hazardous materials impacts for ammonia storage are required. However, since no mitigation measures have been identified over and above the extensive safety regulations that currently apply to the storage of ammonia, no feasible cumulative mitigation measures for ammonia storage have been identified that would reduce cumulative impacts from hazards and hazardous materials to less than significant. Therefore, cumulative hazards and hazardous materials impacts remain significant; however, because no additional mitigation measures were identified no cumulative mitigation measures for hazards and hazardous materials impacts for ammonia use and storage are required.

CUMULATIVE ENVIRONMENTAL IMPACTS

CEQA Guidelines Section 15130(a) requires a discussion of cumulative impacts if a project may have an effect that is potentially cumulatively considerable, as defined in CEQA Guidelines Section 15065(a)(3). The preceding analysis concluded there are no cumulative secondary impacts associated with the NOx emissions limits and compliance dates as contained in PARs 1110.2 and 1100. Further, upon completion of construction at all affected facilities, the net effect of the proposed project will result in overall emission reductions of NOx. In addition, any construction as part of the proposed project will be temporary (for approximately one to four years) and the overall NOx emissions will be reduced during the construction and operation overlap. For example, an increase in NOx emissions during the construction and operation overlap period is expected to result in approximately 46 pounds of NOx per day as indicated in Table 4-14, however the proposed project is expected to result in NOx emission reductions of 0.29 ton per day (approximately 580 pounds per day) after implementation of BARCT limits. Further, as facilities complete modifications to their existing stationary engines to comply with PAR 1110.2, the incremental NOx emission reductions that are expected to occur would offset the NOx emissions generated during construction. To achieve NOx emission reductions in the proposed project, new SCR systems, modifications to existing SCR and NSCR systems, replacement engines, and repowering of engines would need to be occur and ammonia usage would need to be increased. Further, no exceedances of the South Coast AQMD's air quality significance thresholds for any pollutant are expected to occur either during construction, during construction with overlapping operational impacts, or during operation after all construction is completed. Any temporary emission increases in NOx during construction will not interfere with the air quality progress and attainment demonstration projected in the 2016 AQMP. Based on regional modeling analyses performed for the 2016 AQMP, implementing control measures contained in the 2016 AQMP, in addition to the air quality benefits of the existing rules, is anticipated to bring the South Coast AQMD region into attainment with all national and most state ambient air quality standards. In particular, the federal annual PM2.5 standards are predicted to be achieved in 2023 with implementation of the proposed ozone strategy and the California annual PM2.5 standard will be achieved in 2025. The 2016 AQMP is also expected to achieve the ozone 8-hour standard by 2023.

Per CEQA Guidelines Section 15130(e), previously approved land use documents, including, but not limited to, general plans, specific plants, regional transportation plans, plans for the reduction of greenhouse gas emissions, and local coastal plans may be used in a cumulative impact analysis. A pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference pursuant to the provisions for tiering and program EIRs. No further cumulative impacts analysis is required when a project is consistent with a general, specific, master, or comparable programmatic plan where the lead agency determines that the regional or areawide cumulative impacts of the proposed project have already been adequately addressed, as defined in CEQA Guidelines Section 15152(f), in a certified EIR for that plan. Further, if a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact, as provided in CEQA Guidelines Section 15183(j).

Full implementation of the proposed project would achieve NOx emission reductions capable of offsetting the construction NOx emissions. As facilities implement modifications to retrofit existing stationary engines with new air pollution control equipment (e.g., SCR technology/systems installation), modify existing SCR or NSCR systems, or repower or replace existing stationary engines, emissions from construction are expected to occur. However, as RECLAIM facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the four-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur due to the project's overall NOx emission reductions. Specifically, as facilities complete their engine retrofit, repower, or replacement, most facilities may reduce their NOx emissions ranging from five pounds per day to 229 pounds per day, as illustrated in Appendix F. There are two facilities, each with one engine, which will see NOx emission reductions less than 0.5 pound per day. However, these are smaller engines rated at or less than 450 bhp and with limited operating hours as specified in their operating permits. Thus, when all of the affected facilities complete their modifications to the affected engines in order to comply with PAR 1110.2, the expected NOx emission reductions of 0.29 ton per day (580 pounds per day) will be permanent and cumulatively a larger quantity relative to the temporary NOx emissions (46 pounds per day) generated during construction. Also, implementation of other control measures in the 2016 AQMP will provide human health benefits by reducing population exposures to existing NOx emissions. Therefore, cumulative 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 2016 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 2016 AQMP Final Program EIR that cumulative air quality impacts from all AQMP control measures are not expected to be significant. Therefore, there will be no significant cumulative adverse air quality impacts from implementing the proposed project.

In addition, there is a potential for creating significant adverse hazards and hazardous materials impacts from the catastrophic failure of an ammonia storage tank, which has been based on the toxic endpoint (using U.S. EPA RMP*Comp) and the proximity of affected facilities to nearby sensitive receptors. Because the project-specific hazards and hazardous materials impacts for ammonia deliveries would potentially create significant impacts, they are considered to be cumulatively considerable pursuant to CEQA Guidelines Section 15064(h)(1) and therefore, generate significant adverse cumulative hazards and hazardous materials impacts. However, for ammonia use and storage, the project-specific hazards and hazardous materials impacts do not exceed any applicable significance thresholds; thus, they are not considered to be cumulatively considerable pursuant to CEQA Guidelines Section 15064(h)(1) and therefore, do not generate significant adverse cumulative hazards and hazardous materials impacts.

POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

Because this SEA is a subsequent CEQA document to the March 2017 Final Program EIR for the 2016 AQMP, this SEA relies on the conclusions reached in that document as evidence for environmental areas where impacts were found not to be significant. The previous CEQA document reviewed approximately 17 environmental topic areas and analyzed whether the respective project would create potentially significant adverse impacts. The March 2017 Final Program EIR for the 2016 AQMP concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. It is important to note, however, that for these environmental topic areas, not all of the conclusions of significance are applicable to this currently proposed project, PARs 1110.2 and 1100. Table 4-19 summarizes the eight significant and unavoidable adverse environmental impacts identified in the March 2017 Final Program EIR and identifies which apply to the proposed project.

Table 4-19
Applicability of Significant Impacts in March 2017 Final Program EIR to Proposed Project

CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR[1]	APPLICABLE TO/SIGNIFICANT FOR THE PROPOSED PROJECT?	EXPLANATION
Aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships	No	This environmental topic area is not applicable to PAR 1110.2 because neither catenary lines nor the use of bonnet technology for ships are applicable to stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology). Therefore, this conclusion is not applicable to the proposed project.
Construction air quality and GHGs	Yes, but less than significant	These environmental topic areas are applicable to the proposed project. The impacts for these environmental topics areas are analyzed in this SEA (see pp. 4-3 to 4-24 for construction air quality and GHGs), and the analysis concluded less than significant impacts.
Energy due to increased electricity demand	No	While the use of SCR technology will require some electricity to operate, the amount of electricity that would be needed to install SCR technology for PAR 1110.2 would be less than significant.
Hazards and hazardous materials due the increased flammability of solvents	No	Internal combustion engines and the corresponding NOx emission controls (e.g., SCR technology) do not utilize solvents for their operation. Therefore, this conclusion is not applicable to the proposed project.
Hazards and hazardous materials due to the storage, accidental release and transportation of ammonia	Yes	This environmental topic area is applicable to the proposed project because SCR technology utilizes ammonia. The impacts for this environmental topic area are analyzed in this SEA (see pp. 4-24 to 4-32). The analysis concluded significant impacts for the storage and accidental release of ammonia and less than significant impacts for the transportation of ammonia.
Hazards and hazardous materials due to the storage and transportation of LNG	No	Affected internal combustion engines and the corresponding NOx emission controls (e.g., SCR technology) do not utilize LNG for their operation. Therefore, this conclusion is not applicable to the proposed project.

Table 4-19
Applicability of Significant Impacts in March 2017 Final Program EIR to Proposed Project (concluded)

CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR[1]	APPLICABLE TO/SIGNIFICANT FOR THE PROPOSED PROJECT?	EXPLANATION
Hazards and hazardous materials due to proximity to schools	Yes	This conclusion is applicable to the proposed project because some of the affected facilities that will install new SCR systems are located near schools. The impacts for this environmental topic area are analyzed in this SEA (see pp. 4-24 to 4-32).
Hydrology (water demand)	No	Stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology) do not utilize water for their operation. Therefore, this conclusion is not applicable to the proposed project.
Construction noise and vibration	No	While the construction activities associated with installing new SCR technology for affected stationary gas turbines may create some noise and vibration, the existing noise environment at each facility is typically dominated by noise from existing equipment on-site, vehicular traffic around the facilities, and trucks entering and existing facility premises. Operation of the construction equipment would be expected to comply with all existing noise control laws and ordinances. Further, since the facilities are located in industrial or commercial land use areas, the noise generated during construction will likely be indistinguishable from the background noise levels at the property line. Therefore, the potential noise increases are expected to be within the allowable noise levels established by the local noise ordinances for industrial areas, and thus are expected to be less than significant.
Solid construction waste and operational waste from vehicle and equipment scrapping	No	Vehicle scrapping is not applicable to stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology). Therefore, this conclusion is not applicable to the proposed project.
Transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors	No	Catenary lines and the associated transportation and traffic impacts on roadways and at the harbors are not applicable to stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology). Therefore, this conclusion is not applicable to the proposed project.

1. The March 2017 Final Program EIR for the 2016 AQMP concluded that impacts on biological resources were less than significant. However, one of the affected facilities is located near a wetland. A review of the site shows that the affected engines are located in the upper bluff and not directly adjacent to the wetland. Additionally, based on South Coast AQMD staff's discussion with the facility during a site visit in December 2018, construction will occur within an existing building with minimal construction on the exterior of the building. Therefore, significant impacts to biological resources are not expected as a result of the proposed project.

The proposed project is expected to have: 1) significant effects that were not discussed in the previous March 2017 Final Program EIR for the 2016 AQMP [CEQA Guidelines Section 15162(a)(3)(A)]; and 2) significant effects that were previously examined that will be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP [CEQA Guidelines Section 15162(a)(3)(B)].

By preparing a SEA for the proposed project, since the topics of air quality and hazards and hazardous materials are the only environmental topic areas that would be affected by the proposed project no other environmental topic areas have been evaluated in this SEA. Thus, the conclusions reached in this Draft SEA are consistent with the conclusions reached in the previously certified CEQA document (e.g., the March 2017 Final Program EIR for the 2016 AQMP) that aside from the topic of hazards and hazardous materials, there would be no other significant adverse effects from the implementation of the proposed project. Thus, the proposed project would have no significant or less than significant direct or indirect adverse effects on the following environmental topic areas:

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

The March 2017 Final Program EIR for the 2016 AQMP can be found using the links referenced in Chapter 2.

SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

CEQA Guidelines Section 15126(b) requires an environmental analysis to consider "any significant environmental effects which cannot be avoided if the proposed project is implemented." This SEA identified the topic of hazards and hazardous materials as the only environmental topic area having potentially significant adverse environmental affects if the proposed project is implemented.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Section 15126(c) requires an environmental analysis to consider "any significant irreversible environmental changes which would be involved if the proposed action should be implemented." This SEA identified the topic of hazards and hazardous materials as the only environmental area with potentially significant adverse impacts if the proposed project is implemented. Significant adverse impacts to hazards and hazardous materials from the storage and use of ammonia cannot be mitigated to less than significant levels; thus, they may be considered irreversible because facility operators that install new SCRs for reducing NOx emissions are likely to operate these systems for the lifetime of the equipment.

POTENTIAL GROWTH-INDUCING IMPACTS

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

RELATIONSHIP BETWEEN SHORT-TERM AND LONG-TERM ENVIRONMENTAL GOALS

CEQA documents are required to explain and make findings about the relationship between short-term uses and long-term productivity. (CEQA Guidelines Section 15065(a)(2).) An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term goals or maximizing productivity of these resources. Implementing the proposed project is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. PAR 1110.2 will transition internal combustion engines operated at RECLAIM facilities to a command-and-control regulatory structure. The primary objective of this project is to ensure engines operated at RECLAIM and former RECLAIM facilities meet NOx emission limits and BARCT level equivalency. The proposed project implements control measure CMB-05 from the 2016 AQMP. NOx, is a precursor to the formation of ozone and PM2.5, so even if the proposed project is implemented and there will be some NOx emissions during construction and operation, there will also be an overall NOx emission reduction occurring after implementation of the BARCT limits and these will continue to help attain federal and state air quality standards which are expected to enhance short- and long-term environmental productivity in the region. Implementing the proposed project does not narrow the range of beneficial uses of the environment. Of the potential environmental impacts discussed in Chapter 4, only those related to hazards and hazardous materials for ammonia storage are concluded to have potentially significant adverse effects.

CHAPTER 5

ALTERNATIVES

INTRODUCTION

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

METHODOLOGY FOR DEVELOPING PROJECT ALTERNATIVES

The alternatives typically included in CEQA documents for proposed South Coast AQMD rules, regulations, or plans are developed by breaking down the project into distinct components (e.g., emission limits, compliance dates, applicability, exemptions, pollutant control strategies, etc.) and varying the specifics of one or more of the components. Different compliance approaches that generally achieve the objectives of the project may also be considered as project alternatives.

Alternatives to the proposed project were crafted by varying the timing of compliance. Of the amendments proposed to Rules 1110.2 and 1100, only the components that pertain to complying with the NOx emission limits in PAR 1110.2 could entail physical modifications to the affected equipment and that these physical modifications could create adverse environmental impacts. As such, in addition to the no project alternative, two alternatives were developed by modifying compliance deadlines of the proposed project, which effect the manner and timing in which compliance with the NOx emission limits may be achieved.

Typically for projects with potentially significant adverse environmental impacts, the existing setting is established at the time the Notice of Preparation/Initial Study (NOP/IS) is circulated for public review. However, as previously explained, the proposed project is a subsequent CEQA document to the previously approved project that was analyzed in the March 2017 Final Program EIR for the 2016 AQMP.

The March 2017 Final Program EIR for the 2016 AQMP concluded that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts to seven topic areas – air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste and transportation. However, as outlined in Table 4-15, only the topics of air quality and hazards and hazardous materials are applicable to the proposed project (e.g., PARs 1110.2 and 1100).

CEQA Guidelines Section 15125(a) recognizes that a baseline may be established at times other than when the NOP/IS is circulated to the public by stating (emphasis added), "This environmental setting ***will normally*** constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." Chapter 3 summarizes the existing setting/baseline for control measure CMB-05 from the 2016 AQMP as well as the current versions of Rules 1110.2 and 1100.

DESCRIPTION OF ALTERNATIVES

The evaluation of the components that comprise PAR 1110.2 indicate that only the installation of new ammonia storage tanks to support the installation of new SCR systems in order to comply with the proposed NOx emission limits could result in potentially significant adverse hazards and hazardous materials impacts for ammonia storage and use. In particular, for each affected facility that was identified as having the potential to install one new ammonia storage tank, an analysis to determine the potential for an offsite consequence in the event of a release of ammonia was conducted using U.S. EPA RMP*Comp (see Appendix D - List of Affected Facilities and Chapter 4 for the analysis). The analysis indicated that a catastrophic failure of an aqueous ammonia storage tank would cause a significant adverse hazards and hazardous materials impact to nearby sensitive receptors located within 0.1 mile of the storage tank (e.g., the toxic endpoint distance), and up to 0.5 mile for one facility located in a rural area with terrain that is generally flat and unobstructed.

The evaluation also indicates that implementation of PAR 1110.2 will result in facility owners/operations making physical modifications to affected equipment and these activities will cause adverse, but less than significant, impacts to air quality during construction, during the period when construction and operation activities overlap, and during operation.

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

Three alternatives to the proposed project have been developed and summarized in Table 5-1, as follows: Alternative A - No Project, Alternative B – Distributed Generation Limits, Alternative C – Lower Limits, Alternative D – Phased Compliance Dates. The primary components of the proposed alternatives that have been modified are timing in which compliance with the NOx emission limits may be achieved or having stricter limits within the same compliance schedule. Unless otherwise specifically noted, all other components of the project alternatives are identical to the components of the proposed project.

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

The following subsections provide a brief summary of the proposed project along with a description of the alternatives.

Proposed Project

PAR 1110.2 will facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure and will implement Control Measure CMB-05, of the 2016 AQMP for RECLAIM internal combustion engines. The main objectives of PAR 1110.2 are to: 1) include internal combustion engines operated at current and former RECLAIM facilities which were not previously subject to Rule 1110.2 and require them to comply with BARCT ; 2) establish ammonia slip limits and require ammonia emissions monitoring; 3) exempt non-emergency engines operated at remote two-way radio transmission towers. Additionally, staff is proposing to add definitions for additional clarity, add language to help facilitate the transition from RECLAIM, and revise exemptions to remove provisions that are obsolete. PAR 1110.2 implements control measure CMB-05 from the 2016 Final AQMP in accordance to the implementation schedule of PAR 1100, which requires: 1) two- and four-stroke lean-burn compressor gas engines to comply with the NOx emission limits in PAR 1110.2 within 24 months after a permit to construct is issued, or 36 months after a permit to construct is issued if the application is submitted by July 1, 2021; and 2) all other qualifying engines to meet the NOx emission limits by December 31, 2023. As such, affected engines, except for two- and four-stroke lean-burn compressor gas engines, would have four years to comply with PAR 1110.2.

Alternative A: No Project (Current Versions Rules 1110.2 and 1100 Remain in Effect)

Alternative A, the no project alternative, means that the current versions of Rules 1110.2 and 1100 that were amended in June 2016 and adopted in December 2018, respectively, would remain in effect. Under the current version of Rule 1110.2, engines at RECLAIM facilities would not have to comply with the NOx emission limits in set forth in Rule 1110.2. Further, these engines would not be required to transition out of the NOx RECLAIM program in accordance with the schedule outlined in the current version of Rule 1100. Under the no project alternative, no NOx emission reductions will be achieved, no ammonia use would be needed, and the stationary gas turbines at RECLAIM and non-RECLAIM facilities would not meet BARCT level equivalency.

Alternative B: Distributed Generation Emission Limits

Under Alternative B, the timeline for the facilities transitioning out of RECLAIM would be the same as the proposed project as proposed in PAR 1100. However, engines would be required to meet the NOx, VOC, and CO emission limits listed in Table IV of Rule 1110.2 which are lower than the NOx emission limits in the proposed project and thus result in more NOx reductions by December 31, 2023 (four years). However, to meet the emission limits, both RECLAIM and non-RECLAIM facilities would be affected and more construction impacts are expected. In addition to the new SCR systems being installed, facilities with existing SCR system may need to modify their systems or replace their system. Also, in order to meet the limits, more ammonia or urea would need to be used, and potentially result in more ammonia delivery trips. Further, a higher ammonia slip limit would be implemented and higher ammonia emissions are expected. However, implementation of this alternative would also result in lower VOC and CO emissions. Affected engines are currently required to meet the VOC and CO emission limits listed in Table III of Rule 1110.2. However, VOC and CO emission limits listed in Table IV are more stringent and although actual emissions are not quantified, VOC and CO emission reductions are expected. While the emission limits for NOx, CO, and VOC in Alternative B are more stringent than the proposed project, the adverse environmental impacts are greater than the proposed project due to the increase in number of affected facilities which would in turn cause an increase in construction activities within the same compliance schedule as the proposed project. Alternative A is less stringent than the proposed project with no air quality benefits and no adverse hazards and hazardous materials impacts.

Alternative C: Stricter Limits

For Alterative C, the requirements would be equivalent to the proposed project and the timeline for the facilities transitioning out of RECLAIM would be the same as the proposed project as proposed in PAR 1100. However, engines would need to comply with a lower NOx emission limit of seven ppm. As such, implementing this alternative will result in more NOx reductions. However, similar to Alternative B, Alternative C will also affect both RECLAIM and non-RECLAIM facilities and subsequently result in more emission impacts from construction. In addition to the new SCR systems being installed, facilities with existing SCR system may need to modify their systems or replace their system. Also, in order to meet the limits, more ammonia or urea would need to be used, and potentially result in more ammonia delivery trips. As such, higher ammonia emissions are expected. Alternative C is more stringent than the proposed project, but less stringent than Alternative B.

Alternative D: Phased Compliance Dates

Under Alternative D, the requirements would be equivalent to the proposed project and the timeline for the facilities transitioning out of RECLAIM would be the same as the proposed project as proposed in PAR 1100, but the compliance dates for achieving the NOx and ammonia emission limits for engines used for natural gas compression and pipeline transmission operated at RECLAIM and former RECLAIM facilities would be delayed until December 31, 2027. The same number of facilities and equipment would be affected; however, a portion of the NOx reductions would be foregone. Additionally, with the compliance date delayed for engines used for natural gas compression and pipeline transmission, there will be fewer overlapping construction activities. Therefore, Alternative D would have fewer impacts from construction activities on a peak daily basis since some facilities will have an additional four years to comply with the NOx and ammonia emission limits in PAR 1110.2. Alternative D is less stringent than the proposed project.

Table 5-1
Summary of the Proposed Project and Alternatives

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Emission Limit	11 ppmv NOx @ 15% O2	No emission limits except for existing permit limits	Meet NOx, CO, and VOC limits listed in Table IV of Rule 1110.2 for new non-emergency engines driving electrical generators 0.070 lbs/MW-hr NOx 0.20 lbs/MW-hr CO 0.10 lbs/MW-hr VOC	7 ppmv NOx @ 15% O2	11 ppmv NOx @ 15% O2
Ammonia Slip Limit	5 ppmv @ 15% O2	No emission limits except for existing permit limits	10 ppm @ 15% O2	5 ppmv @ 15% O2	5 ppmv @ 15% O2
Compliance Date	December 31, 2023[1]	N/A	December 31, 2023[1]	December 31, 2023[1]	December 31, 2023, except for compressor gas two-stroke or four-stroke lean-burn engines which will have a compliance date of December 31, 2027
Control Technology to Meet Project Objectives	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)	N/A	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)	*Lean-burn engines*: SCR with ammonia injection *Rich-burn engines*: 3-way catalyst (NSCR)

1. Compressor gas two-stroke or four-stroke lean-burn engines have up to 24 months after a permit to construct is issued or up to 36 months if the application for permit to construct is submitted by July 1, 2021.

COMPARISON OF ALTERNATIVES

The following section describes the potential air quality and hazards and hazardous materials impacts that may occur for the project alternatives. A comparison of the environmental impacts for each project alternative is provided in Table 5-2. No other environmental topics other than air quality during the overlapping construction and operation phase for Alternatives B and C and hazards and hazardous materials for the proposed project, and Alternatives B and C were determined to be significantly adversely affected by implementing alternatives.

Pursuant to the requirements in CEQA Guidelines Section 15126.6(b) to mitigate or avoid the significant effects that a project may have on the environment, a comparison of the potential impacts to air quality and hazards and hazardous materials from each of the project alternatives for the individual rule components that comprise the proposed project is provided in Table 5-2. Secondary impacts from the proposed project were identified as having significant adverse impacts for hazards and hazardous materials from storage of ammonia (due to an accidental rupture of the storage tank). The proposed project is considered to provide the best balance between emission reductions and the adverse environmental impacts due to the storage of ammonia (accidental rupture) while achieving the objectives of the project. Therefore, the proposed project is preferred over the project alternatives.

Pursuant to CEQA Guidelines Section 15126.6(d), a CEQA document "shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed." Accordingly, Table 5-2 provides a matrix displaying the major characteristics and significant environmental effects of the proposed project and each alternative.

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Air Quality	Expected to result in NOx emission reductions of 0.29 ton per day. Engines at affect RECLAIM and former RECLAIM facilities will transition to a command-and-control regulatory structure. The affected lean burn engines are expected to be retrofitted with SCR technology, replaced, or retrofitted. Affected lean burn engines equipped with existing SCR systems are expected to modify their air pollution control system. The affected rich burn engines are equipped with NSCR systems and are expected to modify or replace their air-to-fuel ratio controller and catalyst. Upon project implementation, all affected engines at RECLAIM and non-RECLAIM facilities will achieve BARCT equivalency for NOx.	No NOx emission reductions will occur because RECLAIM facilities would not transition to a command-and-control regulatory structure such that their engines will not be retrofitted with air pollution control equipment, repowered, or replaced.	Expected to meet project objectives of achieving BARCT for NOx but there would be a higher ammonia slip limit. In addition to NOx emission reductions, there will also be CO and VOC emission reductions.[1] Additional NOx reductions beyond the expected 0.29 ton of NOx per day of the proposed project but would expand the project scope to include non-RECLAIM facilities. Therefore, more facilities are expected to undergo construction on a peak day leading to potentially higher peak day emissions and subsequently significant impacts for air quality. Moreover, ammonia slip limit will be higher which will result in more ammonia emissions than the proposed project.	Expected to meet project objectives of achieving BARCT for NOx and ammonia slip. Additional NOx emission reductions beyond the proposed project's estimated 0.29 ton per day from expanding the project scope to include non-RECLAIM facilities. More facilities are expected to undergo construction on a peak day leading to potentially higher peak daily construction emissions and subsequently significant impacts for air quality during construction.	Expected to meet project objectives of achieving BARCT for NOx and ammonia slip. NOx emission reductions will be delayed; however, there will be fewer impacts from construction emissions since engines used for natural gas compression and pipeline transmission have an additional 4 years to comply. As such, fewer facilities are expected to undergo construction on a peak day and therefore would result in lower peak day emissions.

1. CO and VOC limits listed in Table IV of Rule 1110.2 are more stringent than the current limits for existing engines. Although emission reductions are not quantified, the requirement to meet the lower CO and VOC limits of Table IV would result in CO and VOC emission reductions.

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Significance of Air Quality Impacts	**Less than Significant:** No exceedances of the South Coast AQMD's air quality significance thresholds for any pollutant are expected to occur either during construction, during construction with overlapping operational impacts, or during operation after all construction is completed. As facilities implement modifications to retrofit existing stationary engines with air pollution control equipment (e.g., SCR technology/systems installation), or repower or replace existing stationary engines, emissions from construction are expected to occur. As affected RECLAIM and former RECLAIM facilities transition their existing engines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit (see Appendix F). Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur due to the project's overall NOx emission reductions.	**Not Significant:** Alternative A would not result in an exceedance of any South Coast AQMD air quality significance thresholds during construction or operation because no physical modifications would be expected to occur that would create construction emissions or reduce overall NOx emissions from the affected equipment. The South Coast AQMD will not achieve any emission reductions of NOx (a pre-cursor to the formation of ozone); thus, progress towards attainment for the South Coast AQMD for ozone is unlikely to occur.	**Significant:** Due to lower emissions limits, the construction schedules of the affected facilities under Alternative B would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day since both RECLAIM and non-RECLAIM facilities would be affected. As such, an exceedance of the South Coast AQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary engines on a peak day, than the proposed project. As facilities transition their existing stationary engines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.	**Significant:** Due to lower emissions limits, the construction schedules of the affected facilities under Alternative B would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day since both RECLAIM and non-RECLAIM facilities would be affected. As such, an exceedance of the South Coast AQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary engines on a peak day, than the proposed project. As facilities transition their existing stationary engines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.	**Less than Significant:** Due to the delayed compliance date for engines used for natural gas compression and pipeline transmission, the construction schedules of the affected facilities would be expected to occur over a longer period of time such that fewer facilities would be expected to undergo construction on a peak day. As such, exceedances of the South Coast AQMD's air quality significance threshold are not expected to occur and there will likely be fewer overlapping construction of SCR systems and/or retrofit, repower or replacement of engines on a peak day than the proposed project. As facilities transition their existing engines to achieve BARCT emission levels over the 4-year compliance period for engines not used for natural gas compression or distribution, and over the additional 3-year compliance period for the remaining engines, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Although there will be a delay in NOx emission reductions, upon completion of construction at all affected facilities, an overall benefit to air quality will occur due to the project's overall NOx emission reductions.

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Hazards and Hazardous Materials	Some of the affected engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Further, there are new ammonia delivery trips for facilities operating new SCR systems and one facility operating an existing SCR system will need additional urea deliveries. Ammonia is considered to be a hazardous material.	None of the affected facilities will be required to achieve BARCT level equivalency through compliance with the proposed project. As such, no engines will be retrofitted with SCR technology. Thus, no new ammonia storage tanks will be needed.	Some of the affected engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Further, there are new ammonia delivery trips for facilities operating new SCR systems and facilities operating an existing SCR system will use more ammonia or urea to meet the emission limits and subsequently, need additional ammonia/urea deliveries. Facilities are also expected to use more ammonia to achieve the NOx emission limits and with a higher ammonia slip limit. Ammonia is considered to be a hazardous material.	Some of the affected engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Further, there are new ammonia delivery trips for facilities operating new SCR systems and facilities operating an existing SCR system will use more ammonia or urea to meet the emission limits and subsequently, need additional ammonia/urea deliveries. Ammonia is considered to be a hazardous material.	Some of the affected stationary engines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Ammonia is considered to be a hazardous material.

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Distributed Generation (DG) Limits	ALTERNATIVE C Stricter Limits	ALTERNATIVE D Phased in Compliance Date
Significance of Hazards and Hazardous Materials Impacts	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required.	**Not Significant:** The construction of SCR systems would not be necessary; thus, there would be no need to use ammonia or build new ammonia storage tanks. No significant hazards or hazardous materials impacts would be expected to occur.	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required. The number of new SCR systems will likely be the same as the proposed project since non-RECLAIM facility are already required to meet current BARCT. However, to meet the DG emission limits, facilities with existing SCR will need to use more ammonia and subsequently result in more ammonia deliveries. The level of significance in Alternative B would be greater than the proposed project.	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required. The number of new SCR systems will likely be the same as the proposed project since non-RECLAIM facility are already required to meet current BARCT. However, to meet the lower NOx emission limits, facilities with existing SCR will need to use more ammonia and subsequently result in more ammonia deliveries. The level of significance in Alternative C would be greater than the proposed project.	**Significant:** Based on the analysis, using U.S. EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility's boundaries, mitigation measures will be required. The number of affected facilities would be the same as the proposed project. The level of significance in Alternative D would be equivalent to the amount in the proposed project.

ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines Section 15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. CEQA Guidelines Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in a CEQA document are: 1) failure to meet most of the basic project objectives; 2) infeasibility; or, 3) inability to avoid significant environmental impacts.

As noted in the Introduction, the range of feasible alternatives to the proposed project is limited by the nature of the proposed project and associated legal requirements. Similarly, the range of alternatives considered, but rejected as infeasible is also relatively limited.

The following discussion identifies Alternative A, the No Project Alternative, as being rejected due its failure to meet most of the basic project objectives.

CEQA documents typically assume that the adoption of a No Project alternative would result in no further action on the part of the project proponent or lead agency. For example, in the case of a proposed land use project such as a housing development, adopting the No Project alternative terminates further consideration of that housing development or any housing development alternative identified in the associated CEQA document. In that case, the existing setting would typically remain unchanged.

The concept of taking no further action (and thereby leaving the existing setting intact) by adopting a No Project alternative does not readily apply to implementation of a control measure that has been adopted and legally mandated in the 2016 AQMP. The federal and state Clean Air Acts require the South Coast AQMD to implement the AQMP in order to attain all state and national ambient air quality standards. More importantly, a No Project alternative in the case of the proposed project is not a legally viable alternative because it violates a state law requirement in Health and Safety Code Section 40440 that regulations mandate the use of BARCT for existing sources and for the subset of RECLAIM facilities subject to the requirements of ABs 617 and 398.

"The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, *as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services*…" It should be noted that, except for air quality, there would be no further incremental impacts on the existing environment if no further action is taken. Although there are other existing rules that may have future compliance dates for NOx emission reductions, potential adverse impacts from these rules have already been evaluated in the March 2017 Final Program EIR for the 2016 AQMP and their subsequent rule-specific CEQA documents. While air quality would continue to improve to a certain extent, it is unlikely that all state or federal ozone standards would be achieved as required by the federal and California CAAs. It is possible that the federal 24-hour PM2.5 standard may be achieved; however, it is unlikely that further progress would be made towards achieving the state PM2.5 standard as required by the California CAA.

LOWEST TOXIC ALTERNATIVE

In accordance with South Coast AQMD's policy document Environmental Justice Program Enhancements for FY 2002-03, Enhancement II-1 recommends for all South Coast AQMD CEQA documents which are required to include an alternatives analysis, the alternative analysis shall also include and identify 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 hazardous or toxic air pollutants.

As explained in the hazards and hazardous materials discussion in Chapter 4, implementation of the proposed project may alter the hazards and hazardous materials associated with the existing facilities affected by the proposed project. Air pollution control equipment (e.g., SCR systems) are expected to be installed at affected facilities such that their operations may increase the quantity of ammonia (a hazardous material) utilized. The main NOx reduction technology considered for the proposed project is based on employing SCR systems. The analysis shows that in order to control NOx from existing stationary internal combustion engines, the use of SCRs may increase the use of toxic materials (e.g., aqueous ammonia).

To identify a lowest toxic alternative with respect to the proposed project, a lowest toxic alternative would be if either no control technologies are employed that utilize hazardous or toxic materials or NOx control technologies are employed that use the least amount of hazardous or toxic materials. For the proposed project and Alternatives B, C, and D, it is assumed that SCR technology may be used control NOx emissions, since PAR 1110.2 neither prescribes the method for controlling NOx emissions nor requires replacement of the existing engines with newer, cleaner equipment without the use of SCR systems. Of the three alternatives, only Alternative A – the No Project alternative, does not assume that SCR systems and ammonia will be utilized. Thus, hazardous materials would not be needed if Alternative A is implemented.

Under Alternative A, the No Project alternative, RECLAIM and former RECLAIM facilities would not be required to meet the NOx emission limits in PAR 1110.2, no new ammonia emission limits would be imposed on stationary engines, no NOx air pollution control equipment (e.g., SCR systems) would be installed, and no NOx emission reduction benefits would occur. As such, Alternative A does not meet the project objectives. Further, no significant adverse impacts from constructing and operating NOx air pollution control equipment would be expected to occur under Alternative A, and no hazards and hazardous materials impacts would be expected because no hazardous or toxic materials would be needed. Because Alternative A would not change toxic emissions or alter the existing use of hazardous materials when compared to the proposed project, Alternative A, if implemented, is considered to be the lowest toxic alternative.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Pursuant to CEQA Guidelines Section 15126.6(e)(2), if the environmentally superior alternative is the "no project" alternative, the CEQA document shall also identify an alternate environmentally superior alternative from among the other alternatives.

If Alternative A is implemented, PARs 1110.2 and 1100 would not be adopted, the proposed project's objectives would not be achieved such that no NOx emission reductions and the corresponding health benefits would not occur. If Alternative A is implemented, the quantity of NOx emissions currently generated by the affected engines (the baseline) will remain unchanged. Currently, the Basin is in non-attainment for ozone and cannot achieve attainment unless NOx emission reductions occur. In addition, RECLAIM and former RECLAIM facilities with engines would not transition to a command-and-control regulatory structure or some engines would not achieve BARCT level equivalency if Alternative A is implemented. While Alternative A would not result in any significant adverse air quality or hazards and hazardous materials impacts, Alternative A would also not achieve the project objectives and air quality benefits. Therefore, Alternative A is not the environmentally superior alternative.

If Alternative B is implemented, RECLAIM and non-RECLAIM facilities would be required to meet the NOx, CO, and VOC limits listed in Table IV of Rule 1110.2 which are referred to as the distributed generation (DG) limits and exceed the requirements to meet current BARCT. However, the ammonia slip limit would be 10 ppmv instead of five ppmv as in the proposed project. The compliance date would be the same as the proposed project and result in additional NOx emission reductions beyond the 0.29 ton per day. While Alternative B will meet the project objectives, a substantial number of facilities would be affected, resulting in more potential overlapping construction activities. The air quality impacts due to the physical modifications expected to take place at the affected facilities would be expected to exceed the South Coast AQMD's regional air quality significance threshold for NOx during the overlapping construction and operation phase. While a concurrent operational air quality benefit would result due to Alternative B's overall NOx as well as CO and VOC emission reductions, to achieve the reductions would result in construction occurring over the same compliance period as the proposed projects but with more affected facilities. As such, the operational benefit from NOx emission reductions may not fully reduce the concurrent temporary increases in NOx emissions occurring during construction to less than significant levels. Under Alternative B, the hazards and hazardous materials impacts could be potentially be more significant than the proposed project as there are more affected facilities that may need to use more ammonia or urea to achieve the DG emission limits. Furthermore, ammonia emissions of ammonia are expected to be greater than the proposed project since ammonia slip limits would be higher (less stringent). If Alternative B is implemented, the project objectives would be achieved but potentially significant adverse air quality impacts during overlapping construction and operations will be expected to occur in addition to the significant adverse hazards and hazardous materials due to ammonia storage and use during operation.

Alternative C is the same as the proposed project except that Alternative C would require both RECLAIM and non-RECLAIM facilities to comply with a NOx emission limit below the current limits of Rule 1110.2. The compliance date would be the same as the proposed project and result in additional NOx emission reductions beyond the 0.29 ton per day. While Alternative C will meet the project objectives, similar to Alternative B, a substantial number of facilities would be affected, resulting in more potential overlapping construction activities. The air quality impacts due to the physical modifications expected to take place at the affected facilities would be expected to exceed the South Coast AQMD's regional air quality significance threshold for NOx during the overlapping construction and operation phase. While a concurrent operational air quality benefit would result due to Alternative C's overall NOx emission reductions, to achieve the reductions would result in construction occurring over the same compliance period as the proposed projects but with more affected facilities. As such, the operational benefit from NOx emission reductions may not fully reduce the concurrent temporary increases in NOx emissions occurring during construction to less than significant levels. Under Alternative C, the hazards and hazardous materials impacts could be potentially be more significant than the proposed project as there are more affected facilities that may need to use more ammonia or urea to achieve the NOx emission limit. However, since the ammonia slip limit is the same as the proposed project, emissions of ammonia are not expected to be more significant than the proposed project. If Alternative C is implemented, the project objectives would be achieved but potentially significant adverse air quality impacts during overlapping construction and operations will be expected to occur in addition to the significant adverse hazards and hazardous materials due to ammonia storage and use during operation.

If Alternative D is implemented, the compliance dates for achieving the NOx emission limits for affected engines at RECLAIM and former RECLAIM and ammonia emission limits would be the same as the proposed project. However, engines used for natural gas compression and pipeline transmission would be delayed until December 31, 2027. While the same quantity of NOx emission reductions would be achieved under Alternative D as the proposed project (e.g., 0.29 ton per day), a portion of these NOx emission reductions would be foregone until 2028. While the number of affected facilities would be the same as the proposed project, engines used for natural gas compression and pipeline transmission at RECLAIM and former RECLAIM facilities would have up to an additional four years to retrofit, repower, or replace their equipment to comply with BARCT (up to four years more). The air quality impacts due to the physical modifications expected to take place at the affected facilities would be expected to exceed the South Coast AQMD's regional air quality significance threshold for NOx during the overlapping construction and operation phase. A concurrent operational air quality benefit would result due to Alternative D's overall NOx emission reductions, and with a later compliance date for certain facilities there will likely be fewer overlapping facilities on a peak day since fewer facilities will need to meet the December 31, 2023 deadline. Under Alternative C, there will be fewer impacts during the construction and operation phase than the proposed project; however, a portion of NOx reductions will be delayed until 2028.

In summary, of the three alternatives, Alternative B would be considered the environmentally superior alternative.

CONCLUSION

Of the three alternatives analyzed, Alternative A would generate the least severe and fewest number of adverse and beneficial environmental impacts compared to the proposed project. However, of the project alternatives, Alternative A would achieve none of the project objectives and would have no NOx emission reduction benefits.

Also, because Alternative A would not involve any use of any hazardous or toxic materials, Alternative A is considered to be the lowest toxic alternative.

Thus, when comparing the environmental effects of the project alternatives to the proposed project and evaluating the effectiveness of whether each alternative is achieving the project objectives, while the proposed project has potentially significant hazards and hazardous materials impacts due to ammonia storage and use, these impacts are smaller relative to what was analyzed for Alternatives B and C, and mitigation measures have been crafted to help affected facilities reduce or completely prevent, depending on each facility's proximity to a sensitive receptor, their potential for an offsite release. Implementation of Alternative D would results in fewer impacts than the proposed project; however, a portion of the NOx emission reductions will be foregone due to a later compliance date for certain facilities. Subsequently the project objective of requiring engines operated at RECLAIM and former RECLAIM facilities to meet current BARCT in accordance with existing Rule 1110.2 NOx emission limits by December 31, 2023 would not be met. The proposed project provides the best balance in achieving the project objectives while, unlike Alternatives B and C, assuring that less than significant air quality impacts will occur during construction, during the construction and operation overlap and during operation after full implementation of the proposed project.

APPENDICES

Appendix A: Proposed Amended Rule 1110.2 - Emissions from Gaseous-and Liquid-Fueled Engines and Proposed Amended Rule 1100 – Implementation Schedule for NOx Facilities

Appendix B: CalEEMod Files and Assumptions

Appendix C: CEQA Impact Evaluations – Assumptions and Calculations

Appendix D: PAR 1110.2 List of Affected Facilities

Appendix E: Hazards Analysis

APPENDIX A

Proposed Amended Rule 1110.2 - Emissions from Gaseous-and Liquid-Fueled Engines and Proposed Amended Rule 1100 – Implementation Schedule for NOx Facilities

APPENDIX A-1

Proposed Amended Rule 1110.2

(Adopted August 3, 1990)(Amended September 7, 1990)(Amended August 12, 1994)
(Amended December 9, 1994)(Amended November 14, 1997)(Amended June 3, 2005)
(Amended February 1, 2008)(Amended July 9, 2010)(Amended September 7, 2012)
(Amended December 4, 2015)(Amended June 3, 2016)(PAR 1110.2 July 2019)

PROPOSED AMENDED RULE 1110.2 EMISSIONS FROM GASEOUS- AND LIQUID-FUELED ENGINES

(a) Purpose

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NO_x), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines.

(b) Applicability

All stationary and portable engines over 50 rated brake horsepower (bhp) are subject to this rule

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

(1) AGRICULTURAL STATIONARY ENGINE is a non-portable engine used for the growing and harvesting of crops of the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. An engine used for the processing or distribution of crops or fowl or animals is not an agricultural engine.

(2) APPROVED EMISSION CONTROL PLAN is a control plan, submitted on or before December 31, 1992, and approved by the Executive Officer prior to November 14, 1997, that was required by subdivision (d) of this rule as amended September 7, 1990.

(3) BREAKDOWN is a physical or mechanical failure or malfunction of an engine, air pollution control equipment, or related operating equipment that is not the result of operator error, neglect, improper operation or improper maintenance procedures, which leads to excess emissions beyond rule related emission limits or equipment permit conditions.

(4) CERTIFIED SPARK-IGNITION ENGINE means engines certified by California Air Resources Board (CARB) to meet emission standards in accordance with Title 13, Chapter 9, Article 4.5 of the California Code of Regulations (CCR).

(5) EMERGENCY STANDBY ENGINE is an engine which operates as a temporary replacement for primary mechanical or electrical power during

periods of fuel or energy shortage or while the primary power supply is under repair.

(6) ENGINE is any spark- or compression-ignited internal combustion engine, including engines used for control of VOC's, but not including engines used for self-propulsion.

(7) EXEMPT COMPOUNDS are defined in South Coast AQMD ~~District~~ Rule 102 – Definition of Terms.

(8) FACILITY means any source or group of sources or other air contaminant emitting activities which are located on one or more contiguous properties within the South Coast AQMD~~District~~, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or by persons under common control), or an outer continental shelf (OCS) source as determined in Section 55.2 of Title 40, Part 55 of the Code of Federal Regulations (40 CFR Part 55). Such above-described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one facility. Sources or installations involved in crude oil and gas production in Southern California Coastal or OCS Waters and transport of such crude oil and gas in Southern California Coastal or OCS Waters shall be included in the same facility which is under the same ownership or use entitlement as the crude oil and gas production facility on-shore.

(9) FORMER RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX, that has received a final determination notification, and is no longer in the RECLAIM program.

(~~9~~10) LEAN-BURN ENGINE means an engine that operates with high levels of excess air and an exhaust oxygen concentration of greater than 4 percent.

(~~10~~11) LOCATION means any single site at a building, structure, facility, or installation. For the purpose of this definition, a site is a space occupied or to be occupied by an engine. For engines which are brought to a facility to perform maintenance on equipment at its permanent or ordinary location, each maintenance site shall be a separate location.

(~~11~~12) NET ELECTRICAL ENERGY means the electrical energy produced by a generator, less the electrical energy consumed by any auxiliary equipment necessary to operate the engine generator and, if applicable, any heat recovery equipment, such as heat exchangers.

(13) NON-RECLAIM FACILITY means a facility, or any of its successors, that was not in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.

(~~12~~14) NON-ROAD ENGINE is any engine, defined under 40 CFR Part 89, that does not remain or will not remain at a location for more than 12 consecutive months, or a shorter period of time where such period is representative of normal annual source operation at a stationary source that resides at a fixed location for more than 12 months (e.g., seasonal operations such as canning facilities), and meets one of the following:

(A) Is used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as a mobile crane); or

(B) Is used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawn mowers and string trimmers); or

(C) By itself, or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Transportability includes, but is not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting.

(~~13~~15) OPERATING CYCLE means a period of time within which a round of regularly recurring events is completed, and cannot be stopped without the risk of endangering public safety or health, causing material damage to the equipment or product, or cannot be stopped due to technical constraints. Economic reasons alone will not be sufficient to extend this time period. The operating cycle includes batch processes that may start and finish several times within a twenty-four hour period, in which case each start to finish interval is considered a complete cycle.

(~~14~~16) OXIDES OF NITROGEN (NOx) means nitric oxide and nitrogen dioxide.

(~~15~~17) PORTABLE ENGINE is an engine that, by itself or in or on a piece of equipment, is designed to be and capable of being carried or moved from one location to another. Indications of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting. The operator must demonstrate the necessity of the engine being periodically moved from one location to another because of the nature of the operation.

An engine is not portable if:

(A) the engine or its replacement remains or will reside at the same location for more than 12 consecutive months. Any engine, such as a back-up or stand-by engine, that replaces an engine at a location and is intended to perform the same function as the engine being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of both engines, including the time between the removal of the original engine and installation of the replacement engine, will be counted toward the consecutive time period; or

(B) the engine remains or will reside at a location for less than 12 consecutive months where such a period represents the full length of normal annual source operations such as a seasonal source; or

(C) the engine is removed from one location for a period and then it or its equivalent is returned to the same location thereby circumventing the portable engine residence time requirements.

The period during which the engine is maintained at a designated storage facility shall be excluded from the residency time determination.

(~~16~~18) RATED BRAKE HORSEPOWER (bhp) is the rating specified by the manufacturer, without regard to any derating, and listed on the engine nameplate.

(19) RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.

(~~17~~20) RICH-BURN ENGINE WITH A THREE-WAY CATALYST means an engine designed to operate near stoichiometric conditions with a catalytic control device that simultaneously reduces emissions of NOx, CO and VOC.

(21) SOUTH COAST AQMD means the South Coast Air Quality Management District.

(~~18~~22) STATIONARY ENGINE is an engine which is either attached to a foundation or if not so attached, does not meet the definition of a portable or non-road engine and is not a motor vehicle as defined in Section 415 of the California Vehicle Code.

(~~19~~2 TIER 2 AND TIER 3 DIESEL ENGINES mean engines certified by

3) CARB to meet Tier 2 or Tier 3 emission standards in accordance with Title 13, Chapter 9, Article 4 of the CCR.

(~~20~~2 4) USEFUL HEAT RECOVERED means the waste heat recovered from the engine exhaust and/or cooling system that is put to productive use. The waste heat recovered may by assumed to be 100% useful unless the hot water, steam or other medium is vented to the atmosphere, or sent directly to a cooling tower or other unproductive use.

(~~21~~2 5) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102.

(d) Requirements

(1) Stationary Engines:

(A) Operators of stationary engines with an amended Rule 1110.1 Emission Control Plan submitted by July 1, 1991, or an Approved Emission Control Plan, designating the permanent removal of engines or the replacement of engines with electric motors, in accordance with subparagraph (d)(1)(B), shall do so by December 31, 1999, or not operate the engines on or after December 31, 1999 in a manner that exceeds the emission concentration limits listed in Table I:

TABLE I
ALTERNATIVE TO ELECTRIFICATION CONCENTRATION LIMITS

NO_x	VOC	CO
(ppmvd)[1]	(ppmvd)[2]	(ppmvd)[1]
11	30	70

[1] Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

[2] Parts per million by volume, measured as carbon**,** corrected to 15% oxygen on a dry basis and averaged over the sampling time required by the test method.

(B) The operator of any other stationary engine not covered by (d)(1)(A) and not exempt from this rule shall

(i) Remove such engine permanently from service or replace the engine with an electric motor, or

(ii) Not operate the engine in a manner that exceeds the applicable emission concentration limits listed in either Table II or Table III-A or B.

TABLE II CONCENTRATION LIMITS		
NO_x (ppmvd)[1]	VOC (ppmvd)[2]	CO (ppmvd)[1]
bhp ≥ 500: 36 bhp < 500: 45	250	2000
CONCENTRATION LIMITS EFFECTIVE JULY 1, 2010		
NO_x (ppmvd)[1]	VOC (ppmvd)[2]	CO (ppmvd)[1]
bhp ≥ 500: 11 bhp < 500: 45	bhp ≥ 500: 30 bhp < 500: 250	bhp ≥ 500: 250 bhp < 500: 2000
CONCENTRATION LIMITS EFFECTIVE JULY 1, 2011		
NO_x (ppmvd)[1]	VOC (ppmvd)[2]	CO (ppmvd)[1]
11	30	250

1 Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

2 Parts per million by volume, measured as carbon**,** corrected to 15% oxygen on a dry basis and averaged over the sampling time required by the test method.

(iii) The concentration limits effective on and after July 1, 2010 shall not apply to engines that operate less than 500 hours per year or use less than 1 x 10^9 British Thermal Units (Btus) per year (higher heating value) of fuel.

(iv) If the operator of a two-stroke engine equipped with an oxidation catalyst and insulated exhaust ducts and catalyst housing demonstrates that the CO and VOC limits effective on and after July 1, 2010 are not achievable, then the Executive Officer may, with United States Environmental Protection Agency (EPA) approval, establish technologically achievable, case-by-case CO and VOC limits in place of the concentration limits effective on and after July 1, 2010. The case-by-case limits shall not exceed 250 ppmvd VOC and 2000 ppmvd CO.

(v) If the operator of an engine that uses non-pipeline quality natural gas demonstrates that due to the varying heating value of the gas a longer averaging time is necessary, the Executive Officer may establish for the engine a longer averaging time, not to exceed ~~six~~ twenty-four hours, for any of the concentration limits of Table II. Non-pipeline quality natural gas is a gas that does not meet the gas specifications of the local gas utility and is not supplied to the local gas utility.

(vi) For owners and operators of two-stroke engines equipped with selective catalytic reduction pollution control equipment, an averaging time of 60 minutes shall be used for demonstrating compliance with the NOx requirements of Table II.

(vii) Upon startup after (*date of amendment*), any new engine installation with selective catalytic reduction pollution control equipment or retrofit for an existing engine with selective catalytic reduction pollution control equipment that results in ammonia emissions in the exhaust shall not discharge into the atmosphere ammonia emissions in excess of 5 ppm (referenced at 15 percent volume stack gas oxygen on a dry basis, averaged over a period of 60 consecutive minutes).

(C) The operator of any stationary engine fired by landfill or digester gas (biogas) shall not operate the engine in a manner that exceeds the emission concentration limits of Table III-A, provided that the facility monthly average biogas usage by the biogas engine is 90% or more, based on the higher heating value of the fuels used. The calculation of the monthly facility biogas use percentage may exclude natural gas fired during: any electrical outage at the facility; a Stage 2 or higher electrical emergencies called by the California Independent System Operator Corporation; and when a sewage treatment plant activates an Emergency Operations Center or Incident Command System, as part of an emergency response plan, because of either high influent flows caused by precipitation or a disaster.

TABLE III-A CONCENTRATION LIMITS FOR LANDFILL AND DIGESTER GAS (BIOGAS)-FIRED ENGINES		
NO_x (ppmvd)[1]	VOC (ppmvd)[2]	CO (ppmvd)[1]
bhp ≥ 500: 36 x ECF[3] bhp < 500: 45 x ECF[3]	Landfill Gas: 40 Digester Gas: 250 x ECF[3]	2000
TABLE III-B CONCENTRATION LIMITS EFFECTIVE JANUARY 1, 2017		
NO_x (ppmvd)[1]	VOC (ppmvd)[2]	CO (ppmvd)[1]
11	30	250

1 Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

2 Parts per million by volume, measured as carbon**,** corrected to 15% oxygen on a dry basis and averaged over the sampling time required by the test method.

3 ECF is the efficiency correction factor.

The ECF shall be 1.0 unless:

(i) The engine operator has measured the engine's net specific energy consumption (q_a), in compliance with ASME Performance Test Code PTC 17 -1973, at the average load of the engine; and

(ii) The ECF-corrected emission limit is made a condition of the engine's permit to operate.

The ECF is as follows:

$$ECF = \frac{9250 \text{ Btus/hp-hr}}{\text{Measured } q_a \text{ in Btus/hp-hr}}$$

Measured q_a shall be based on the lower heating value of the fuel. ECF shall not be less than 1.0.

The Executive Officer may approve the burning of more than 10% natural gas in a landfill or digester gas-fired engine, when it is necessary, if: the only alternative to limiting natural gas to 10% would be shutting down the engine and flaring more landfill or digester gas; or the engine requires more natural gas in order for a waste heat recovery boiler to provide enough thermal energy to operate a sewage treatment plant, and other boilers at the facility are unable to provide the necessary thermal energy.

(D) Notwithstanding the provisions of subparagraph (d)(1)(B), the operator of any stationary engine fired by landfill or digester gas (biogas) shall not operate the engine in a manner that exceeds the emission concentration limits of Table III.

(E) Biogas engine operators that establish to the satisfaction of the Executive Officer that they have complied with the emissions limits of Table III-B by January 1, 2015 will have their respective engine permit application fees refunded.

(F) For the City of San Bernardino, Orange County Sanitation District, and Eastern Municipal Water District that commenced and implemented technology demonstration projects prior to January 1, 2015, all their biogas engines shall have until January 1, 2018 to comply with the requirements of Table III-B.

(G) Once an engine complies with the concentration limits as specified in Table III-B, there shall be no limit on the percentage of natural gas burned.

(H) The concentration limits effective as specified in Table III-B shall not apply to engines that operate fewer than 500 hours per year or use less than 1 x 10^9 Btus per year (higher heating value) of fuel.

(I) <u>Upon startup of a new engine installation with catalytic controls or a retrofit of catalytic controls for an existing engine, for determining compliance with the NOx and/or CO limits of Table III-B, an operator of a biogas engine with CEMS may utilize a monthly fixed interval averaging time for the first four months after startup. After the initial four month startup period, an operator of a biogas engine may determine compliance by utilizing a 24 hour averaging time, provided the operator demonstrates through CEMS data that the engine is achieving a concentration at or below 9.9 ppmv for NOx and/or 225 ppmv for CO (if CO is selected for averaging), each corrected to 15% O2, over a four month rolling time period. If during any four month period, the engine is not</u>

achieving the emissions criteria contained in this subparagraph, the engine shall revert to 15-minute averaging, but can resume 24 hour averaging if the engine can demonstrate the aforementioned emissions criteria over a four month period. Procedures for demonstrating the emissions criteria contained in this subparagraph, for demonstrating compliance with 24 hour averaging, and for reverting to 15-minute averaging shall be contained in the facility's Inspection and Monitoring plan, as specified in subparagraph (f)(1)(D). Exceedances of the emissions criteria contained in this subparagraph shall be reported, pursuant to the requirements in clause (f)(1)(H)(iii).~~An operator of a biogas engine may determine compliance with the NOx and/or CO limits of Table III-B by utilizing a longer averaging time as set forth below, provided the operator demonstrates through CEMS data that the engine is achieving a concentration at or below 9.9 ppmv for NOx and 225 ppmv for CO (if CO is elected for averaging), each corrected to 15% O_2, over a 4 month time period. An operator may utilize a monthly fixed interval averaging time for the first 4 months of the retrofitted engine's operation and up to a 24 hour fixed interval averaging time thereafter. For purposes of determining compliance using a longer averaging time:~~

(i) For the purposes of determining compliance using a monthly or 24 hour averaging time:

(I) An operator shall not average data during one-minute periods in which the underlying equipment is not operated or when the CEMS is undergoing zero or calibration checks, cylinder gas audits, or routine maintenance in accordance with the provisions in Rules 218 and 218.1.

(II) Notwithstanding the requirements of Rules 218 and 218.1, for one-minute time periods where NOx and/or CO CEMS data are greater than 95 percent of the Rule 218.1 Full Scale Range while the underlying equipment is operating, an operator shall use substitute data. A concentration equivalent to 3 times the NOx and/or CO emission limits in Table III-B (each corrected to 15% O2) shall be used as substitute data.

(III) The intentional shutdown of a CEMS to circumvent the emission limits of Table III-B while the underlying equipment is in operation shall constitute a violation of this rule.

(IV) The averaging provisions of this subparagraph shall not apply to CEMS that are time shared by multiple biogas engines.

~~(i) An operator shall not average data during one-minute periods in which the underlying equipment is not operated or when the CEMS is undergoing zero or calibration checks, cylinder gas audits, or routine maintenance in accordance with the provisions in Rules 218 and 218.1.~~

~~(ii) Notwithstanding the requirements of Rules 218 and 218.1, for one-minute time periods where NOx and/or CO CEMS data are greater than 95 percent of the Rule 218.1 Full Scale Range while the underlying equipment is operating, an operator shall use substitute data. A concentration equivalent to 3 times the NOx and/or CO emission limits in Table III-B (each corrected to 15% O2) shall be used as substitute data.~~

~~(iii) The intentional shutdown of a CEMS to circumvent the emission limits of Table III-B while the underlying equipment is in operation shall constitute a violation of this rule.~~

~~(iv) The averaging provisions of this subparagraph shall not apply to CEMS that are time shared by multiple biogas engines.~~

(J) The operator of any new engine subject to subparagraph (e)(1)(B) shall:

(i) Comply with the requirements of Best Available Control Technology in accordance with Regulation XIII if the engine requires a South Coast AQMD ~~District~~ permit; or

(ii) Not operate the engine in a manner that exceeds the emission concentration limits in Table I if the engine does not require a South Coast AQMD ~~District~~ permit.

(K) By February 1, 2009, the operator of a spark-ignited engine without a Rule 218-approved continuous emission monitoring system (CEMS) or a Regulation XX (RECLAIM)-approved CEMS shall equip and maintain the engine with an air-to-fuel ratio controller with an oxygen sensor and feedback control, or other equivalent technology approved by the Executive Officer, CARB and EPA.

(L) New Non-Emergency Electrical Generators

(i) All new non-emergency engines driving electrical-generators shall comply with the following emission standards:

TABLE IV
EMISSION STANDARDS FOR NEW ELECTRICAL GENERATION DEVICES

Pollutant	Emission Standard (lbs/MW-hr)[1]
NOx	0.070
CO	0.20
VOC	0. 10[2]

[1] The averaging time of the emission standards is 15 minutes for NOx and CO and the sampling time required by the test method for VOC, except as described in the following clause.

[2] Mass emissions of VOC shall be calculated using a ratio of 16.04 pounds of VOC per lb-mole of carbon.

(ii) Engines subject to this subparagraph that produce combined heat and electrical power may include one megawatt-hour (MW-hr) for each 3.4 million Btus of useful heat recovered (MW_{th}-hr), in addition to each MW-hr of net electricity produced (MW_e-hr). The compliance of such engines shall be based on the following equation:

$$\frac{\text{Lbs}}{\text{MW-hr}} = \frac{\text{Lbs}}{\text{MW}_e\text{-hr}} \times \text{Electrical Energy Factor (EEF)}$$

Where:

Lbs/MW-hr = The calculated emissions that shall comply with the emission standards in Table IV

Lbs/MW_e-hr = The short-term engine emission limit in pounds per MWe-hr of net electrical energy produced, averaged over 15 minutes. The engine shall comply with this limit at all times.

EEF = The annual MW_e-hrs of net electrical energy produced divided by the sum of annual MW_e-hrs plus annual MW_{th}-hrs of useful heat recovered. The engine operator shall demonstrate annually that the EEF is less than the value required for compliance.

(iii) For combined heat and power engines, the short-term emission limits in lbs/MW_e-hr and the maximum allowed annual EEF must be selected by operator and stated on the operating permit.

(iv) Notwithstanding Rule 2001, the requirements of this subparagraph shall apply to NOx emissions from new non-emergency engines driving electrical-generators~~ subject to Regulation XX (RECLAIM)~~ at RECLAIM or former RECLAIM facilities.

(v) This subparagraph does not apply to: engines installed prior to February 1, 2008; engines issued a permit to construct prior to February 1, 2008 and installed within 12 months of the date of the permit to construct; engines for which an application is deemed complete by October 1, 2007; engines installed by an electric utility on Santa Catalina Island; engines installed at remote locations without access to natural gas and electric power; engines used to supply electrical power to ocean-going vessels while at berth, prior to January 1, 2014; or landfill or digester gas-fired engines that meet the requirements of subparagraph (d)(1)(C).

(2) Portable Engines:

(A) The operator of any portable engine generator subject to this rule shall not use the portable generator for:

(i) Power production into the electric grid, except to maintain grid stability during an emergency event or other unforeseen event that affects grid stability; or

(ii) Primary or supplemental power to a building, facility, stationary source, or stationary equipment, except during unforeseen interruptions of electrical power from the serving utility, maintenance and repair operations, and remote operations where grid power is unavailable. For interruptions of electrical power, the operation of a portable generator shall not exceed the time of the actual interruption of power.

This subparagraph shall not apply to a portable generator that complies with emission concentration limits of Table I and the other requirements in this rule applicable to stationary engines.

(B) The operator of any portable diesel engine shall comply with the applicable requirements of the Subchapter 7.5 Airborne Toxic Control Measures for diesel particulate matter in Chapter 1, Division 3, Title 17 of the California Code of Regulations.

(C) The operator of any portable spark-ignited engine shall comply with the applicable requirements of the Large Spark Ignition Engine Fleet Requirements, Article 2, Chapter 15, Division 3, Title 13 of the California Code of Regulations.

(e) Compliance

(1) Agricultural Stationary Engines:

(A) The operator of any agricultural stationary engine subject to this rule and installed or issued a permit to construct prior to June 3, 2005 shall comply with subparagraph (d)(1)(B) and the other applicable provisions of this rule in accordance with the compliance schedules in Table V:

TABLE V COMPLIANCE SCHEDULES FOR STATIONARY AGRICULTURAL ENGINES		
Action Required	**Tier 2 and Tier 3 Diesel Engines, Certified Spark-Ignition Engines, and All Engines at Facilities with Actual Emissions Less Than the Amounts in the Table of Rule 219(q)**	**Other Engines**
Submit notification of applicability to the Executive Officer	January 1, 2006	January 1, 2006
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	March 1, 2009	September 1, 2007
Initiate construction of engine modifications, control equipment, or replacement engines	September 30, 2009, or 30 days after the permit to construct is issued, whichever is later	March 30, 2008, or 30 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	January 1, 2010, or 60 days after the permit to construct is issued, whichever is later	July 1, 2008, or 60 days after the permit to construct is issued, whichever is later
Complete initial source testing	March 1, 2010, or 120 days after the permit to construct is issued, whichever is later	September 1, 2008, or 120 days after the permit to construct is issued, whichever is later

The notification of applicability shall include the following for each engine:

(i) Name and mailing address of the operator

(ii) Address of the engine location

(iii) Manufacturer, model, serial number, and date of manufacture of the engine

(iv) Application number

(v) Engine type (diesel, rich-burn spark-ignition or lean-burn spark-ignition)

(vi) Engine fuel type

(vii) Engine use (pump, compressor, generator, or other)

(viii) Expected means of compliance (engine replacement, control equipment installation, or electrification)

(B) The operator of any new agricultural stationary engine that is not subject to the compliance schedule of subparagraph (e)(1)(A) for existing engines shall comply with the requirements of subparagraph (d)(1)(J) immediately upon installation.

(2) Non-Agricultural Stationary Engines:

(A) The operator of any stationary engine not meeting the requirements of subparagraph~~s~~ (d)(1)(B) or (d)(1)(C) that go into effect in 2010 or later, shall comply with the compliance schedule in Table VI:

TABLE VI
COMPLIANCE SCHEDULE FOR NON -AGRICULTURAL STATIONARY ENGINES

Action Required	Applicable Compliance Date
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	Twelve months before the final compliance date
Initiate construction of engine modifications, control equipment, or replacement engines	Three months before the final compliance date, or 60 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	The final compliance date, or 120 days after the permit to construct is issued, whichever is later
Complete initial source testing	60 days after the final compliance date in subparagraph (d)(1)(B) or (d)(1)(C), or 180 days after the permit to construct is issued, whichever is later

(B) The operator of any stationary engine that elects to amend a permit to operate to incorporate ECF-adjusted emission limits shall submit to the Executive Officer an application for a change of permit conditions by August 1, 2008, and comply with emission limits of the previous version of this rule until February 1, 2009 when the engine shall be in compliance with the emission limits of this rule.

(C) The operator of any stationary engine that is required to add operating restrictions to a permit to operate to meet the requirements of this rule shall submit to the Executive Officer an application for a change of permit conditions by August 1, 2008.

(3) Stationary Engine CEMS

(A) The operator of any stationary engine with an existing CEMS shall commence the reporting required by Rule 218 Subdivision (f) on January 1, 2008. The first summary report for the six months ending June 30, 2008 shall be due on July 30, 2008.

(B) The operator of any stationary engine that is required to modify an existing CEMS or install a CEMS on an existing engine shall comply with the compliance schedule in Table VII. Public agencies shall be allowed one year more than the dates in Table VII, except for biogas engines.

<u>(C)</u> <u>The operator of any stationary engine that is located at a RECLAIM or former RECLAIM facility that is required to modify an existing CEMS or install a CEMS on an existing engine that is subject to subdivision (f)(1) shall comply with the compliance schedule in Table VII such that the operator shall submit to the Executive Officer applications for a new or modified CEMS within 90 days of becoming a former RECLAIM facility.</u>

TABLE VII
COMPLIANCE SCHEDULE FOR NEW OR MODIFIED CEMS ON EXISTING ENGINES

Action Required	**Applicable Compliance Dates For:**		
	Non-Biogas Engines Rated at 750 bhp or More	**Non-Biogas Engines Rated at Less than 750 bhp**	**Biogas Engines***

Submit to the Executive Officer applications for new or modified CEMS	August 1, 2008	August 1, 2009	January 1, 2011
Complete installation and commence CEMS operation, calibration, and reporting requirements	Within 180 days of initial approval	Within 180 days of initial approval	Within 180 days of initial approval
Complete certification tests	Within 90 days of installation	Within 90 days of installation	Within 90 days of installation

TABLE VII
COMPLIANCE SCHEDULE FOR NEW OR MODIFIED CEMS ON EXISTING ENGINES

	Applicable Compliance Dates For:		
Action Required	**Non-Biogas Engines Rated at 750 bhp or More**	**Non-Biogas Engines Rated at Less than 750 bhp**	**Biogas Engines***
Submit certification reports to Executive Officer	Within 45 days after tests are completed	Within 45 days after tests are completed	Within 45 days after tests are completed
Obtain final approval of CEMS	Within 1 year of initial approval	Within 1 year of initial approval	Within 1 year of initial approval

* A biogas engine is one that is subject to the emission limits of Table III.

(4) Stationary Engine Inspection and Monitoring (I&M) Plans:

The operator of stationary engines subject to the I&M plan provisions of subparagraph (f)(1)(D) shall:

(A) By August 1, 2008, submit an initial I&M plan application to the Executive Officer for approval;

(B) By December 1, 2008, implement an approved I&M plan or the I&M plan as submitted if the plan is not yet approved.

Any operator of 15 or more stationary engines subject to the I&M plan provisions shall comply with the above schedule for at least 50% of engines, and for the remaining engines shall:

(C) By February 1, 2009, submit an initial I&M plan application to the Executive Officer for approval;

(D) By June 1, 2009, implement an approved I&M plan or the I&M plan as submitted if the plan is not yet approved.

(5) Stationary Engine Air-to-Fuel Ratio Controllers

(A) The operator of any stationary engine that does not have an air-to-fuel ratio controller, as required by subparagraph (d)(1)(K), shall comply with those requirements in accordance with the compliance schedule in Table V, except that the application due date is no later than May 1, 2008 and the initial source testing may be conducted at the time of the testing required by subparagraph (f)(1)(C).

(B) The operator of any stationary engine that has the air-to-fuel ratio controller required by subparagraph (d)(1)(K), but it is not listed on the permit to operate, shall submit to the Executive Officer an application to amend the permit by April 1, 2008.

(C) The operator of more than five engines that do not have air-to-fuel ratio controllers may take an additional three months, to May 1, 2009, to install the equipment on up to 50% of the affected engines.

(6) New Stationary Engines

The operator of any new stationary engine issued a permit to construct after February 1, 2008 shall comply with the applicable I&M or CEMS requirements of this rule when operation commences. If applicable, the operator shall provide the required information in subparagraph (f)(1)(D) to the Executive Officer prior to the issuance of the permit to construct so that the I&M procedures can be included in the permit. A separate I&M plan application is not required.

(7) Biogas Engines

For any biogas engine for which the operator applies to the Executive Officer by April 1, 2008 for a change of permit conditions for ECF-corrected emission limits, or the approval to burn more than 10 percent natural gas in accordance with subparagraph (d)(1)(C), the biogas engine shall not be subject to the initial concentration limits of Tables II or III until August 1, 2008, provided the operator continues to comply with all emission limits in effect prior to February 1, 2008.

(8) Compliance Schedule Exception

If an engine operator submits to the Executive Officer an application for an administrative change of permit conditions to add a permit condition that causes the engine permit to expire by the effective date of any requirement of this rule, then the operator is not required to comply with the earlier steps required by this subdivision for that requirement. The effective date for the CEMS requirements shall be one year after the date that a CEMS application is due.

(9) Exceedance of Usage Limits

(A) If an engine was initially exempt from the new concentration limits in subparagraph (d)(1)(B) or subparagraph (d)(1)(C) that take effect on or after July 1, 2010 because of low engine use but later exceeds the low-use criteria, the operator shall bring the engine into compliance with the rule in accordance with the schedule in Table VI with the final compliance date in Table VI being twelve months after the conclusion of the first twelve-month period for which the engine exceeds the low-use criteria.

(B) If engines that were initially exempt from new CEMS by the low-use criterion in subclause (f)(1)(A)(ii)(I) later exceed that criterion, the operator shall install CEMS on those engines in accordance with the schedule in Table VII, except that the date for submitting the CEMS application in Table VII shall be six months after the conclusion of the first twelve-month period for which the engines exceed the criterion.

(10) RECLAIM or former RECLAIM Facilities

The owner or operator of a RECLAIM or former RECLAIM facility with any unit(s) subject to subdivision (d) shall meet the applicable NOx emission limit in Table II or III-B in accordance with the schedule specified in Rule 1100 – Implementation Schedule for NOx Facilities.

(f) Monitoring, Testing, Recordkeeping and Reporting

(1) Stationary engines:

The operator of any engine subject to the provisions of paragraph (d)(1) of this rule shall meet the following requirements:

(A) Continuous Emission Monitoring

(i) For engines of 1000 bhp and greater and operating more than two million bhp-hr per calendar year, a NO_x and CO continuous emission monitoring system (CEMS) shall be installed, operated and maintained in calibration to demonstrate compliance with the emission limits of this rule.

(ii) (I) For facilities with engines subject to paragraph (d)(1), having a combined rating of 1500 bhp or greater at the same location, and having a combined fuel usage of more than 16 x 10^9 Btus per year (higher heating value), CEMS shall be installed, operated and maintained in calibration to demonstrate compliance of those engines with the applicable NO_x and CO emission limits of this rule.

(II) Any engine that as of October 1, 2007 is located within 75 feet of another engine (measured from engine block to engine block) is considered to be at the same location. Operators of new engines shall not install engines farther than 75 feet from another engine unless the operator demonstrates to the Executive Officer that operational needs or space limitations require it.

(III) The following engines shall not be counted toward the combined rating or required to have a CEMS by this clause: engines rated at less than 500 bhp; standby engines that are limited by permit conditions to only operate when other primary engines are not operable; engines that are limited by permit conditions to operate less than 1000 hours per year or a fuel usage of less than 8 x 10^9 Btus per year (higher heating value of all fuels used); engines that are used primarily to fuel public natural gas transit vehicles and that are required by a permit condition to be irreversibly removed from service by December 31, 2014; and engines required to have a CEMS by the previous clause. A CEMS shall not be required if permit conditions limit the simultaneous use of the engines at the same location in a manner to limit the combined rating of all engines in simultaneous operation to less than 1500 bhp.

(IV) For engines rated below 1000 bhp, the CEMS may be time shared by multiple engines.

(V) Operation of engines by the electric utility in the Big Bear Lake area during the failure of a transmission line to the utility may be excluded from an hours-per-year or fuel usage limit that is elected by the operator pursuant to subclause (f)(1)(A)(ii)(III).

(VI) In lieu of complying with subclause (f)(1)(A)(ii)(I), an operator that is a public agency, or is contracted to operate engines solely for a public agency, may comply with the Inspection and Monitoring Plan requirements of subparagraph (f)(1)(D), except that the operator shall conduct diagnostic emission checks at least weekly or every 150 operating hours, whichever occurs later. If any such engine is found to exceed an applicable NOx or CO limit by a source test required by subparagraph (f)(1)(C) or <u>South Coast AQMD</u> ~~District~~ test using a portable analyzer on three or more occasions in any 12-month period, the operator shall comply with the CEMS requirements of this subparagraph for such engine in accordance with the compliance schedule of Table VII, except that the operator shall submit a CEMS application to the Executive Officer within six months of the third exceedance.

<u>(iii) The owner or operator of each stationary engine with selective catalytic reduction pollution control equipment shall conduct source testing pursuant to clause (f)(1)(C)(iii) or utilize an ammonia CEMS certified under an approved South Coast AQMD protocol to demonstrate compliance with the ammonia emission limit.</u>

(i<u>v</u>~~ii~~) All CEMS required by this rule shall:

(I) Comply with the applicable requirements of Rule 218 and 218.1, including equipment specifications and certification, operating, recordkeeping, quality assurance and reporting requirements, except as otherwise authorized by this rule;

(II) Include equipment that measures and records exhaust gas concentrations, both uncorrected and corrected to 15 percent oxygen on a dry basis; and

(III) Have data gathering and retrieval capability approved by the Executive Officer

(~~i~~v) The operator of an engine that is required to install CEMS may request the Executive Officer to approve an alternative monitoring device (or system components) to demonstrate compliance with the emission limits of this rule. The applicant shall demonstrate to the Executive Officer that the proposed alternative monitoring device is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that engine, according to the criteria specified in 40 CFR Part 75 Subpart E. In lieu of the criteria specified in 40 CFR Part 75 Subpart E, substitute criteria is acceptable if the applicant demonstrates to the Executive Officer that the proposed alternative monitoring device is at minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that engine. Upon approval by the Executive Officer, the substitute criteria shall be submitted to EPA as an amendment to the State Implementation Plan (SIP).

If the alternative monitoring device is denied or fails to be recertified, a CEMS shall be required.

(vi) Notwithstanding the requirements of Rules 218 and 218.1, operators of engines that are required to install a CEMS by clause (f)(1)(A)(ii) of this subparagraph may:

(I) Store data electronically without a strip chart recorder, but there shall be redundant data storage capability for at least 15 days of data. The operator must demonstrate that both sets of data are equivalent.

(II) Conduct relative accuracy testing on the same schedule for source testing in clause (f)(1)(C)(i), instead of annually. The minimum sampling time for each test is 15 minutes.

(vii) Notwithstanding the requirements of Rules 218 and 218.1, operators of engines that are required to install a CEMS by clause (ii) of this subparagraph, and that are to be monitored by a timeshared CEMS, may:

(I) Monitor an engine with the CEMS for 15 consecutive minutes, purge for the minimum required purge time, then monitor the next engine for 15 consecutive minutes. The CEMS shall operate continuously in this manner, except for required calibrations.

(II) Record the corrected and uncorrected NOx, CO and diluent data at least once per minute and calculate and record the 15-minute average corrected concentrations for each sampling period.

(III) Have sample lines to each engine that are not the same length. The purge time will be based on the sample line with the longest response time. Response times shall be checked during cylinder gas audits. Sample lines shall not exceed 100 feet in length.

(IV) Conduct a minimum of five tests for each engine during relative accuracy tests.

(V) Perform a cylinder gas audit every calendar quarter on each engine, except for engines for which relative accuracy testing was conducted that quarter.

(VI) Exclude monitoring of nitrogen dioxide (NO_2) for rich-burn engines, unless source testing demonstrates that NO_2 is more than 10 percent of total NOx.

(VII) Conduct daily calibration error (CE) tests by injecting calibration gases at the analyzers, except that at least once per week the CE test shall be conducted by injecting calibration gases as close to the probe tip as practical.

(VIII) Stop operating and calibrating the CEMs during any period that the operator has a continuous record that the engine was not in operation.

(viii) A CO CEMS shall not be required for lean-burn engines or an engine that is subject to Regulation XX (RECLAIM), and not required to have a NOx CEMS by that regulation.

(ix~~vii~~) Notwithstanding the requirements of this paragraph and paragraph (c)(2) of Rule 2012, an operator may take an existing NOx CEMS out of service for up to two weeks (cumulative) in order to modify the CEMS to add CO monitoring.

(B) Elapsed Time Meter

Maintain an operational non-resettable totalizing time meter to determine the engine elapsed operating time.

(C) Source Testing

(i) Effective August 1, 2008, conduct source testing for NO_x, VOC reported as carbon, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every two years (within the same calendar month of the previous source test), or every 8,760 operating hours, whichever occurs first. Relative accuracy tests required by Rule 218.1 or 40 CFR Part 75 Subpart E will satisfy this requirement for those pollutants monitored by a CEMS. The source test frequency may be reduced to once every three years (within the same calendar month of the previous source test) if the engine has operated less than 2,000 hours since the last source test. If the engine has not been operated within three months of the date a source test is required, the source test shall be conducted when the engine resumes operation for a period longer than either seven consecutive days or 15 cumulative days of operation. The operator of the engine shall keep sufficient operating records to demonstrate that it meets the requirements for extension of the source testing deadlines.

(ii) Conduct source testing for at least 30 minutes during normal operation (actual duty cycle). This test shall not be conducted under a steady-state condition unless it is the normal operation. In addition, conduct source testing for NOx and CO emissions for at least 15 minutes at: an engine's actual peak load, or the maximum load that can be practically achieved during the test, and; at actual minimum load, excluding idle, or the minimum load that can be practically achieved during the test. These additional two tests are not required if the permit limits the engine to operating at one defined load, ± 10%. No pre-tests for compliance are permitted. The emission test shall be conducted at least 40 operating hours, or at least 1 week, after any engine servicing or tuning. If an emission exceedance is found during any of the three phases of the test, that phase shall be completed and reported. The operator shall correct the exceedance, and the source test may be immediately resumed.

(iii) The owner or operator of each stationary engine with selective catalytic reduction pollution control equipment not utilizing a certified ammonia CEMS shall conduct source tests quarterly to demonstrate compliance during the first twelve months of operation of the pollution control equipment and every calendar year thereafter (within the same calendar month of the previous source test) after four consecutive sources tests demonstrate compliance with the ammonia emission limit. If the engine has not been operated within three months of the date a source test is required, the operator may utilize the provisions for extension of the source testing deadlines contained in clause (f)(1)(C)(i).

(iv~~ii~~) Use a contractor to conduct the source testing that is approved by the Executive Officer under the Laboratory Approval Program for the necessary test methods.

(~~i~~v) Submit a source test protocol to the Executive Officer for written approval at least 60 days before the scheduled date of the test. The source test protocol shall include the name, address and phone number of the engine operator and a South Coast AQMD ~~District-~~approved source testing contractor that will conduct the test, the application and permit number(s), emission limits, a description of the engine(s) to be tested, the test methods and procedures to be used, the number of tests to be conducted and under what loads, the required minimum sampling time for the VOC test, based on the analytical detection limit and expected VOC levels, and a description of the parameters to be measured in accordance with the I&M plan required by subparagraph (f)(1)(D). The source test protocol shall be approved by the Executive Officer prior to any testing. The operator is not required to submit a protocol for approval if: there is a previously approved protocol that meets these requirements; the engine has not been altered in a manner that requires a permit alteration; and emission limits have not changed since the previous test. If the operator submits the protocol by the required date, and the Executive Officer takes longer than 60 days to approve the protocol, the operator shall be allowed the additional time needed to conduct the test.

(vi) Provide the Executive Officer at least 30 days prior notice of any source test to afford the Executive Officer the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the engine operator shall notify the Executive Officer as soon as possible of any delay in the original test date, either by providing at least seven days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Executive Officer by mutual agreement.

(vii) Submit all source test reports, including a description of the equipment tested, to the Executive Officer within 60 days of completion of the test.

(viii) By February 1, 2009, provide, or cause to be provided, source testing facilities as follows:

(I) Sampling ports adequate for the applicable test methods. This includes constructing the air pollution control system and stack or duct such that pollutant concentrations can be accurately determined by applicable test methods;

(II) Safe sampling platform(s), scaffolding or mechanical lifts, including safe access, that comply with California General Safety Orders. Agricultural stationary engines are excused from this subclause if they are in remote locations without electrical power;

(III) Utilities for sampling and testing equipment. Agricultural stationary engines are exempt from this subclause if they are on wheels and moved to storage during the off season.

(D) Inspection and Monitoring (I&M) Requirements

(i) I&M Plan. The operator shall:

(I) Submit to the Executive Officer for written approval an I&M plan. One plan application is required for each facility that does not have a NOx and CO CEMS for each engine. <u>Facilities with biogas engines using longer averaging times for compliance using CEMS are required to submit an I&M plan.</u> The I&M plan shall include all items listed in Attachment 1.

(II) Upon written approval by the Executive Officer, implement the I&M plan as approved.

(III) Submit an I&M plan for approval to the Executive Officer for a plan revision before any change in I&M plan operations can be implemented. The operator shall apply for a plan revision prior to any change in emission limits or control equipment.

(ii) Diagnostic emission checks by a portable NOx, CO, and oxygen analyzer shall be conducted at least weekly or every 150 engine operating hours, whichever occurs later.

(I) If an engine is in compliance for three consecutive diagnostic emission checks, without any adjustments to the oxygen sensor set points, then the engine may be checked monthly or every 750 engine operating hours, whichever occurs later, until there is a noncompliant diagnostic emission check or, for rich-burn engines with three-way catalysts, until the oxygen sensor is replaced. When making adjustments to the oxygen sensor set points that are not within 72 hours prior to the diagnostic emission check, returning to a more frequent diagnostic emission check schedule is not required if the engine is in compliance with the applicable emission limits prior to and after the set point adjustments.

(II) For diesel engines and other lean-burn engines that ~~are subject to Regulation XX~~operate at a RECLAIM or former RECLAIM facility or have a NOx CEMs, and that are subject to a CO limit more stringent than the 2000 ppmvd limit of Tables II or III, a CO diagnostic emission check shall be performed at least quarterly, or every 2,000 engine operating hours, whichever occurs later.

(III) For diesel engines and other lean-burn engines that ~~are subject to Regulation XX~~operate at a RECLAIM or former RECLAIM facility or have a NOx CEMs, and that are not subject to a CO limit more stringent than the 2000 ppmvd limit of Tables II or III, diagnostic emission checks are not required.

(IV) No engine or control system maintenance or tuning may be conducted within 72 hours prior to the diagnostic emission check, unless it is an unscheduled, required repair.

(V) The portable analyzer shall be calibrated, maintained and operated in accordance with the manufacturer's specifications and recommendations and the Protocol for the Periodic Monitoring of Nitrogen Oxides, Carbon Monoxide, and Oxygen from Stationary Engines Subject to South Coast Air

Quality Management District Rule 1110.2, approved on February 1, 2008, or subsequent protocol approved by EPA and the Executive Officer.

(iii) Requirements for responding to, diagnosing and correcting breakdowns, faults, malfunctions, alarms, diagnostic emission checks finding emissions in excess of rule or permit limits, and parameters out-of-range.

(I) For any diagnostic emission check or breakdown that results in emissions in excess of those allowed by this rule or a permit condition, the operator shall correct the problem as soon as possible and demonstrate compliance with another diagnostic emission check, or shut down an engine by the end of an operating cycle, or within 24 hours from the time the operator knew of the breakdown or excess emissions, or reasonably should have known, whichever is sooner.

(II) For excess emissions due to breakdowns that result in NOx or CO emissions greater than the concentrations specified in Table VIII, the operator shall not be considered in violation of this rule if the operator demonstrates the all of the following: (1) compliance with subclause (f)(1)(D)(iii)(I), (2) compliance with the reporting requirements of subparagraph (f)(1)(H), and (3) the engine with excess emissions has no more than three incidences of breakdowns with emissions exceeding Table VIII limits in the calendar quarter.

TABLE VIII Excess Emission Concentration Thresholds for Breakdowns		
	NO_x (ppmvd)[1]	CO (ppmvd)[1]
Lean-Burn Engines	45	250
Rich-Burn Engines	150	2000

Biogas Engines[2]	185	2000

[1] Corrected to 15% oxygen.

[2] Effective up to the time of compliance with the limits specified in Table III-B, after which the thresholds revert to the applicable lean or rich-burn engine limits.

(III) Any emission check conducted by South Coast AQMD ~~District~~ staff that finds excess emissions will be treated as a violation.

(IV) For other problems, such as parameters out-of-range, an operator shall correct the problem and demonstrate compliance with another diagnostic emission check within 48 hours of the operator first knowing of the problem.

(iv) If an engine has a NOx CEMS and does not have a CO CEMS, it is subject to this subparagraph (f)(1)(D) as it pertains to CO only.

(E) Operating Log

Maintain a monthly engine operating log that includes:

(i) Total hours of operation;

(ii) Type of liquid and/or type of gaseous fuel;

(iii) Fuel consumption (cubic feet of gas and gallons of liquid); and

(iv) Cumulative hours of operation since the last source test required in subparagraph (f)(1)(C).

Facilities subject to Regulation XX may maintain a quarterly log for engines that are designated as a process unit on the facility permit until such time that the facility becomes a former RECLAIM facility. The facility shall maintain a monthly engine log starting in the month that it has become a former RECLAIM facility.

(F) New Non-Emergency Electrical Generating Engines

Operators of engines subject to the requirements of subparagraph (d)(1)(L) shall also meet the following requirements.

(i) The engine generator shall be monitored with a calibrated electric meter that measures the net electrical output of the engine generator system, which is the difference between the electrical output of the generator and the electricity consumed by the auxiliary equipment necessary to operate the engine generator.

(ii) For engines monitored with a CEMS, the emissions of the monitored pollutants in ppmvd corrected to 15% O2, lbs/hr, and lbs/MW_e-hr and the net MW_e-hrs produced shall be calculated and recorded for the four 15-minute periods of each hour of operation. The mass emissions of NOx shall be calculated based on the measured fuel flow and one of the F factor methods of 40 CFR 60, Appendix A, Method 19, or other method approved by the Executive Officer. Mass emissions of CO shall be calculated in the same manner as NOx, except that the ppmvd CO shall be converted to lb/scf using a conversion factor of 0.727 x 10^{-7}.

(iii) For NOx and CO emissions from engines not monitored with a CEMS and VOC emissions from all engines, the emissions of NOx, CO and VOC in lbs/MW_e-hr shall be calculated and recorded whenever the pollutant is measured by a source test or diagnostic emission check. Mass emissions of NOx and CO shall be calculated in the same manner as the previous clause. Mass emissions of VOC shall be calculated in the same manner, except that the ppmvd VOC as carbon shall be converted to lb/scf using a conversion factor of 0.415 x 10^{-7}.

(iv) For engines generating combined heat and power that rely on the EEF to comply with Table IV emission standards, the daily and annual useful heat recovered (MW_{th}-hrs), net electrical energy generated (MW_e-hrs) and EEF shall be monitored and recorded.

(v) Other methods of calculating mass emissions than those specified, such as by direct measurement of exhaust volume, may be used if approved by the Executive Officer. All monitoring, calculation, and recordkeeping procedures must be approved by the Executive Officer.

(vi) Operators of combined heat and power engines shall submit to the Executive Officer the reports of the following information within 15 days of the end of the first year of operation, and thereafter within 15 days of the end of each calendar year: the annual net electrical energy generated (MW_e-hrs); the annual useful heat recovered (MW_{th}-hrs), the annual EEF calculated in accordance with clause (d)(1)(L)(ii); and the maximum annual EEF allowed by the operating permit. If the actual annual EEF exceeds the allowed EEF, the report shall also include the time periods and emissions for all instances where emissions exceeded any emission standard in Table IV.

(G) Portable Analyzer Operator Training

The portable analyzer tests required by the I&M Plan requirements of subparagraph (f)(1)(D) shall only be conducted by a person who has completed an appropriate South Coast AQMD ~~District~~-approved training program in the operation of portable analyzers and has received a certification issued by the District.

(H) Reporting Requirements

(i) The operator shall report to the Executive Officer, by telephone (1-800-CUT-SMOG or 1-800-288-7664) or other South Coast AQMD ~~District~~-approved method, any breakdown resulting in emissions in excess of rule or permit emission limits within one hour of such noncompliance or within one hour of the time the operator knew or reasonably should have known of its occurrence. Such report shall identify the time, specific location, equipment involved, responsible party to contact for further information, and to the extent known, the causes of the noncompliance, and the estimated time for repairs. In the case of emergencies that prevent a person from reporting all required information within the one-hour limit, the Executive Officer may extend the time for the reporting of required information provided the operator has notified the Executive Officer of the noncompliance within the one-hour limit.

(ii) Within seven calendar days after the reported breakdown has been corrected, but no later than thirty calendar days from the initial date of the breakdown, unless an extension has been approved in writing by the Executive Officer, the operator shall submit a written breakdown report to the Executive Officer which includes:

(I) An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the breakdown;

(II) The duration of the breakdown;

(III) The date of correction and information demonstrating that compliance is achieved;

(IV) An identification of the types of excess emissions, if any, resulting from the breakdown;

(V) A quantification of the excess emissions, if any, resulting from the breakdown and the basis used to quantify the emissions;

(VI) Information substantiating whether the breakdown resulted from operator error, neglect or improper operation or maintenance procedures;

(VII) Information substantiating that steps were immediately taken to correct the condition causing the breakdown, and to minimize the emissions, if any, resulting from the breakdown;

(VIII) A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future; and

(IX) Pictures of any equipment which failed, if available.

(iii) Within 15 days of the end of each calendar quarter, the operator shall submit to the Executive Officer a report that lists each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or a diagnostic emission check that finds excess emissions. Such report shall be in a South Coast AQMD ~~District~~ approved format, and for each incident shall identify the time of the incident, the time the operator learned of the incident, specific location, equipment involved, responsible party to contact for further information, to the extent known the causes of the event, the time and description of corrective actions, including shutting an engine down, and the results of all portable analyzer NOx and CO emissions checks done before or after the corrective actions. The operator shall also report if no incidents occurred.

(2) Portable engines:

The operator of any portable engine shall maintain a monthly engine operating log that includes:

(i) Total hours of operation; or

(ii) Type of liquid and/or type of gaseous fuel; and

(iii) Fuel consumption (cubic feet of gas and gallons of liquid).

Facilities subject to Regulation XX may maintain a quarterly log for engines that are designated as a process unit on the facility permit until such time that the facility becomes a former RECLAIM facility. The facility shall maintain a monthly engine log starting in the month that it has become a former RECLAIM facility.

(3) Recordkeeping for All Engines

All data, logs, test reports and other information required by this rule shall be maintained for at least five years and made available for inspection by the Executive Officer.

(g) Test Methods

Testing to verify compliance with the applicable requirements shall be conducted in accordance with the test methods specified in Table IX, or any test methods approved by CARB and EPA, and authorized by the Executive Officer.

TABLE IX

TESTING METHODS

Pollutant	Method
NO_x	South Coast Air Quality Management District Method 100.1
CO	South Coast Air Quality Management District Method 100.1

VOC	South Coast Air Quality Management District Method 25.1* or ~~District~~ Method 25.3*
Ammonia	South Coast Air Quality Management District Method 207.1

* Excluding ethane and methane

A violation of any standard of this rule established by any of the specified test methods, or any test methods approved by the CARB or EPA, and authorized by the Executive Officer, shall constitute a violation of this rule.

(h) Alternate Compliance Option

(1) In lieu of complying with the applicable emission limits by the effective date specified in Table III-B or subparagraph (d)(1)(F), owners or operators of biogas-fired units may elect to defer compliance in quarterly increments up to one additional year, provided the owner or operator:

(A) Submits an alternate compliance plan and pays a Compliance Flexibility Fee, as provided for in paragraph (h)(2), to the Executive Officer at least 60 days prior to the applicable compliance date in either Table III-B or subparagraph (d)(1)(F) for qualified biogas technology demonstration project engines, and

(B) Maintains on-site a copy of verification of Compliance Flexibility Fee payment and ~~AQMD~~ South Coast AQMD approval of the alternate compliance plan that shall be made available upon request to South Coast AQMD ~~AQMD~~ staff.

(2) Plan Submittal

The alternate compliance plan submitted pursuant to paragraph (h)(1) shall include:

(A) A completed South Coast AQMD ~~AQMD~~ Form 400A with company name, South Coast AQMD ~~AQMD~~ Facility ID, identification that application is for a compliance plan (Section 7a of form), and identification that request is for Rule 1110.2 Compliance Flexibility Fee option (Section 9 of form);

(B) Attached documentation of unit permit ID, unit rated brake horsepower (bhp), and fee calculation;

(C) Filing Fee payment; and

(D) Compliance Flexibility Fee payment as calculated by the following equation:

CFF = bhp x R x Q

Where,

CFF = Compliance Flexibility Fee, $

bhp = rated brake horsepower of unit

R = Fee Rate = $11.75 per brake horsepower per quarter

Q = Number of quarters (up to four)

(3) Usage of Compliance Flexibility Fee funds

The funds collected from the Compliance Flexibility Fee will be applied to South Coast AQMD ~~AQMD~~ NOx reduction programs pursuant to protocols approved under South Coast AQMD ~~District~~ rules.

(i) Exemptions

(1) The provisions of subdivision (d) shall not apply to:

(A) All orchard wind machines powered by an internal combustion engine.

(B) Emergency standby engines, engines used for fire-fighting and flood control, and any other emergency engines approved by the Executive Officer, which have permit conditions that limit operation to 200 hours or less per year as determined by an elapsed operating time meter, and agricultural emergency standby engines that are exempt from a South Coast AQMD ~~District~~ permit and operate 200 hours or less per year as determined by an elapsed operating time meter.

(C) Laboratory engines used in research and testing purposes.

(D) Engines operated for purposes of performance verification and testing of engines.

(E) Auxiliary engines used to power other engines or gas turbines during start-ups.

(F) Portable engines that are registered under the state registration program pursuant to Title 13, Article 5 of the CCR.

(G) Nonroad engines, with the exception that subparagraph (d)(2)(A) shall apply to portable generators.

(H) Engines operating on San Clemente Island~~; and engines operated by the County of Riverside for the purpose of public safety communication at Santa Rosa Peak in Riverside County, where the site is located at an elevation of higher than 7,400 feet above sea~~

~~level and is without access to electric power and natural gas~~.

(I) Agricultural stationary engines provided that:

(i) The operator submits documentation to the Executive Officer by the applicable date in Table V when permit applications are due that the applicable electric utility has rejected an application for an electrical line extension to the location of the engines, or the Executive Officer determines that the operator does not qualify, due to no fault of the operator, for funding authorized by California Health and Safety Code Section 44229; and

(ii) The operator replaces the engines, in accordance with the compliance schedule of Table X, with engines certified by CARB to meet the Tier 4 emission standards of 40 CFR Part 1039 Section 1039.101, Table 1. These Tier 4 replacement engines shall be considered to comply with Best Available Control Technology; and

(iii) The operator does not operate the Tier 4 engines in a manner that exceeds the not-to-exceed standards of 40 CFR Section 1039.101, Paragraph (e), as determined by the test methods of subdivision (g) of this rule.

TABLE X
COMPLIANCE SCHEDULE FOR INSTALLATION OF NEW TIER 4 STATIONARY AGRICULTURAL ENGINES

Action Required	Due Date
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	March 1, 2013
Initiate construction of engine modifications, control equipment, or replacement engines	September 30, 2013, or 30 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	January 1, 2014, or 60 days after the permit to construct is issued, whichever is later

Complete initial source testing	March 1, 2014, or 120 days after the permit to construct is issued, whichever is later

(J) An engine start-up, until sufficient operating temperatures are reached for proper operation of the emission control equipment, and an engine shutdown period. The periods shall not exceed 30 minutes, unless the Executive Officer approves a longer period not exceeding 2 hours for an engine and makes it a condition of the engine permit.

(K) An engine start-up, after an engine overhaul or major repair requiring removal of a cylinder head, for a period not to exceed four operating hours.

(L) The initial commissioning of a new engine for a period specified by permit conditions, provided the operator takes measures to reduce emissions and the duration of the commissioning to the extent possible. The commissioning period shall not exceed 150 operating hours.

<u>(M) An engine used exclusively for electrical generation at remote two-way radio transmission towers where no utility, electricity, or natural gas is available within a ½ mile radius, has a manufacturer's rating of 100 bhp or less, and is fired exclusively on diesel #2, compressed natural gas, or liquefied petroleum gas.</u>

<u>(N) Any engine at a RECLAIM or former RECLAIM facility that is subject to a NOx emission limit in a different rule for an industry-specific category defined in Rule 1100 – Implementation Schedule for NOx facilities.</u>

(2) The facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, shall not be required to meet the emissions requirements specified in Table III-B if they submit a detailed retirement plan that is approved by the Executive Officer for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022. The plan shall describe in detail the steps and schedule that will be taken to remove the equipment or render the equipment permanently inoperable by October 1, 2022 and shall require the surrendering of the permits for the equipment by that date. The plan shall be submitted before July 1, 2016 and include:

(A) <u>South Coast AQMD</u> ~~SCAQMD~~ Form 400A with company name, South Coast AQMD ~~SCAQMD~~ Facility ID, and permit number(s) for the subject equipment; and

(B) Filing Fee payment pursuant to Rule 306.

The Executive Officer shall act on the plan before January 1, 2017.

ATTACHMENT 1

An I&M Plan submitted to the Executive Officer for approval and implementation, pursuant to the requirements of (e)(4), (e)(6), and (f)(1)(D) of the rule, shall include:

A. Identification of engine and control equipment operating parameters necessary to maintain pollutant concentrations within the rule and permit limits. This shall include, but not be limited to:

1. Procedures for using a portable NOx, CO and oxygen analyzer to establish the set points of the air-to-fuel ratio controller (AFRC) at 25%, 60% and 95% load (or fuel flow rate), ± 5%, or the minimum, midpoint and maximum loads that actually occur during normal operation, ± 5%, or at any one load within the ± 10% range that an engine permit is limited to in accordance with clause (f)(1)(C)(ii) of the rule;
2. Procedures for verifying that the AFRC is controlling the engine to the set point during the daily monitoring required by subdivision D of this attachment;
3. Procedures for reestablishing all AFRC set points with a portable NOx, CO and oxygen analyzer whenever a set point must be readjusted, within 24 hours of an oxygen sensor replacement, and, for rich-burn engines with three way catalysts, between 100 and 150 engine operating hours after an oxygen sensor replacement;
4. For engines with catalysts, the maximum allowed exhaust temperature at the catalyst inlet, based on catalyst manufacturer specifications;
5. For lean-burn engines with selective catalytic control devices, the minimum exhaust temperature at the catalyst inlet required for reactant flow (ammonia or urea), and procedures for using a portable NOx and oxygen analyzer to establish the acceptable range of reactant flow rate, as a function of load.

Parameter monitoring is not required for diesel engines without exhaust gas recirculation and catalytic exhaust control devices.

B. Procedures for alerting the operator to emission control malfunctions. Engine control systems, such as air-to-fuel ratio controllers, shall have a malfunction indicator light and audible alarm.

C. Procedures for diagnostic emission checks conducted by a portable NOx, CO, and oxygen analyzer per the requirements of clause (f)(1)(D)(ii) of the rule.

D. Procedures for at least daily monitoring, inspection and recordkeeping of:

1. engine load or fuel flow rate;

2. the set points, maximums and acceptable ranges of the parameters identified by subdivision A of this attachment, and the actual values of the same parameters;
3. the engine elapsed time meter operating hours;
4. the operating hours since the last diagnostic emission check required by clause (f)(1)(D)(ii) of the rule;
5. for rich-burn engines with three-way catalysts, the difference of the exhaust temperatures (ΔT) at the inlet and outlet of the catalyst (changes in the ΔT can indicate changes in the effectiveness of the catalyst);
6. engine control system and AFRC system faults or alarms that affect emissions.

The daily monitoring and recordkeeping may be done in person by the operator, or by remote monitoring.

E. Procedures for responding to, diagnosing and correcting breakdowns, faults, malfunctions, alarms, diagnostic emission checks finding emissions in excess of rule or permit limits, and parameters out-of-range, per the requirements of clause (f)(1)(D)(iii) of the rule.

F. Procedures and schedules for preventive and corrective maintenance.

G. For biogas engines using NOx and/or CO CEMS to demonstrate compliance by using a longer averaging time:

1. procedures for demonstrating that the NOx and/or CO emissions are at or below 9.9 ppmv for NOx and 225 ppmv for CO (if CO is selected for averaging) over a four month period.
2. procedures for demonstrating ongoing compliance with a 24 hour fixed interval averaging time, if the requirements in paragraph F.1. are met.
3. procedures for reverting back to a 15 minute averaging time in the event that the NOx and/or CO emissions are not at or below 9.9 ppmv for NOx and 225 ppmv for CO (if CO is selected for averaging).

~~G~~H. Procedures for reporting noncompliance to the Executive Officer in accordance with subparagraph (f)(1)(H) of the rule.

~~H~~I. Procedures and format for the recordkeeping of monitoring and other actions required by the plan.

APPENDIX A-2

Proposed Amended Rule 1100

(Adopted December 7, 2018)(PAR 1100 July 2019)

PROPOSED AMENDED RULE 1100. IMPLEMENTATION SCHEDULE FOR NOx FACILITIES

(a) Purpose

The purpose of this rule is to establish the implementation schedule for Regulation XX NOx RECLAIM facilities that are transitioning to a command-and-control regulatory structure.

(b) Applicability

This rule applies to any owner or operator of a RECLAIM or former RECLAIM facility that owns or operates equipment that meets the applicability provisions specified in:

(1) Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines

(2) Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; or

(~~2~~3) Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters.

(c) Definitions

(1) ANNUAL HEAT INPUT means the total heat input to a unit during a calendar year.

(2) COMPRESSOR GAS ENGINE is a stationary gaseous-fueled engine used to compress natural gas or pipeline quality natural gas for delivery through a pipeline or into storage. This includes two-stroke and four-stroke lean-burn engines and four-stroke rich-burn engines.

(3) ENGINE is any spark- or compression- ignited internal combustion engine, including engines used for control of VOC's, but not including engines used for self-propulsion.

(~~2~~4) FORMER RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX, that has received a final determination notification, and is no longer in the RECLAIM program.

(~~3~~5) HEAT INPUT means the chemical heat released due to assumed complete combustion of fuel in a unit, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.

(~~4~~6) INDUSTRY-SPECIFIC CATEGORY means RECLAIM or former RECLAIM facilities subject to NOx emission limits in a rule adopted on or after November 2, 2018 for refineries or electricity generating facilities.

(7) LOCATION means any single site at a building, structure, facility, or installation. For the purpose of this definition, a site is a space occupied or to be occupied by an engine. For engines which are brought to a facility to perform maintenance on equipment at its permanent or ordinary location, each maintenance site shall be a separate location.

(~~5~~8) NOx EMISSIONS means the sum of nitric oxides and nitrogen dioxides emitted, calculated as nitrogen dioxide.

(9) PORTABLE ENGINE is an engine that, by itself or in or on a piece of equipment, is designed to be and capable of being carried or moved from one location to another. Indications of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting. The operator must demonstrate the necessity of the engine being periodically moved from one location to another because of the nature of the operation. An engine is not portable if:

(A) the engine or its replacement remains or will reside at the same location for more than 12 consecutive months. Any engine, such as a back-up or stand-by engine, that replaces an engine at a location and is intended to perform the same function as the engine being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of both engines, including the time between the removal of the original engine and installation of the replacement engine, will be counted toward the consecutive time period; or

(B) the engine remains or will reside at a location for less than 12 consecutive months where such a period represents the full length of normal annual source operations such as a seasonal source; or

(C) the engine is removed from one location for a period and then it or its equivalent is returned to the same location thereby circumventing the portable engine residence time requirements.

The period during which the engine is maintained at a designated storage facility shall be excluded from the residency time determination.

(~~6~~10) RATED HEAT INPUT CAPACITY means the heat input capacity as specified by the permit issued by the Executive Officer, or if not specified on the permit, as specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.

(~~7~~11) RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.

(~~8~~12) RULE 1146 UNIT means any boiler, steam generator, water heater, or process heater subject to Rule 1146 with a rated heat input capacity that is equal to or greater than 5 million Btu per hour, excluding units specified in Rule 1146 exemptions.

(~~9~~13) RULE 1146.1 UNIT means any boiler, steam generator, or process heater subject to Rule 1146.1 with a rated heat input capacity that is greater than 2 million Btu per hour and less than 5 million Btu per hour, excluding units specified in Rule 1146.1 exemptions.

(14) SOUTH COAST AQMD means the South Coast Air Quality Management District.

(15) STATIONARY ENGINE is an engine which is either attached to a foundation or if not so attached, does not meet the definition of a portable or non-road engine and is not a motor vehicle as defined in Section 415 of the California Vehicle Code.

(~~10~~16) TITLE V FACILITY means any facility that meets the criteria set forth in Rule 3001 - Applicability.

(d) Rule 1110.2 Implementation Schedule

(1) An owner or operator of a RECLAIM or former RECLAIM facility with any stationary engine(s) subject to and not exempt by Rule 1110.2 shall meet the emission limits listed in Rule 1110.2 paragraph (d)(1) on or before December 31, 2023; however, compressor gas two-stroke and four-stroke lean-burn engines shall meet the emission limits listed in Rule 1110.2 paragraph (d)(1) 24 months after an applicable permit to construct is issued by the Executive

Officer, or 36 months after an applicable permit to construct is issued by the Executive Officer if the application is submitted by July 1, 2021.

(2) An owner or operator of a RECLAIM or former RECLAIM facility with any portable engine(s) subject to Rule 1110.2 shall meet the conditions listed in Rule 1110.2 paragraph (d)(2).

(e) Rule 1146 and Rule 1146.1 Implementation Schedule

(1) An owner or operator of a RECLAIM or former RECLAIM facility with any Rule 1146 or Rule 1146.1 unit shall:

(A) On or before December 7, 2019, submit complete South Coast AQMD ~~SCAQMD~~ permit applications for any Rule 1146 and Rule 1146.1 units that currently do not meet the applicable NOx concentration limit specified in paragraph (~~d~~e)(3);

(B) On or before January 1, 2021 meet the applicable NOx concentration limit for a minimum of 75% of the cumulative total rated heat input capacity of all Rule 1146 and Rule 1146.1 units at the facility; and

(C) On or before January 1, 2022 meet the applicable NOx concentration limit of 100% of Rule 1146 and Rule 1146.1 units at the facility.

(2) An owner or operator that elects to replace an existing Rule 1146 or Rule 1146.1 unit at a RECLAIM or former RECLAIM facility with a new unit may use the rated heat input capacity of the unit being replaced to meet the required percentage of the cumulative total rated heat input capacity for all Rule 1146 and Rule 1146.1 units at the facility specified under subparagraphs (~~d~~e)(1)(B) and (~~d~~e)(1)(C) provided the owner or operator:

(A) On or before December 7, 2019, submits complete South Coast AQMD~~SCAQMD~~ permit applications for any applicable new Rule 1146 and Rule 1146.1 units, as well as accepts a permit condition that identifies which unit(s) will be replaced and no longer operated when the new units are installed or after January 1, 2023, whichever is earlier; and

(B) Replaces the existing unit on or before January 1, 2023.

(3) The applicable NOx concentration limits specified in subparagraphs (~~d~~e)(1)(B) and (~~d~~e)(1)(C) are as follows:

(A) Rule 1146 units shall meet the NOx concentration limit for the category of equipment specified in Rule 1146, Table 1146-1 – NOx Emission Limits and Compliance Schedule; and

(B) Rule 1146 units that meet the applicability provisions specified in Rule 1146 paragraph (c)(2) shall meet the ammonia emission limit specified in Rule 1146 paragraph (c)(2); and

(C) Rule 1146.1 units shall meet the NOx concentration limit for the category of equipment specified in Rule 1146.1, Table 1146.1-1 – NOx Emission Limits and Compliance Schedule

(4) In lieu of complying with the applicable emission limits specified in paragraph (~~d~~e)(3), the owner or operator of the following unit(s) in operation prior to December 7, 2019 with an annual heat input less than or equal to as specified below, shall retain and comply with the unit's NOx emission limit and source testing requirements specified in the South Coast AQMD~~SCAQMD~~ Permit to Operate as of December 7, 2018.

(A) 90,000 therms per year and complying with the requirements specified in Rule 1146 paragraph (c)(5); or

(B) 18,000 therms per year and complying with the requirements specified in Rule 1146.1 paragraph (c)(4).

(5) Notwithstanding paragraph (~~d~~e)(1), an owner or operator of a RECLAIM or former RECLAIM facility that has installed, modified, or has been issued a South Coast AQMD~~SCAQMD~~ Permit to Construct or Permit to Operate for the following Rule 1146 or Rule 1146.1 units prior to December 7, 2018 shall meet the NOx emission limit specified in paragraph (~~d~~e)(3) by December 7, 2033 or when 50 percent or more of the unit's burners are replaced, whichever is earlier:

(A) Fire-tube boilers, as defined in Rule 1146 paragraph (b)(7), subject to Rule 1146 subparagraph (c)(1)(G) or (c)(1)(J) complying with a previous NOx emission limit that is less than or equal to 9 ppm and greater than 5 ppm; or

(B) Units subject to Rule 1146 subparagraph (c)(1)(H) or (c)(1)(K) complying with a previous NOx emission limit that is less than or equal to 12 ppm and greater than 5 ppm; or

(C) Units subject to Rule 1146.1 subparagraph (c)(1)(E)complying with a previous NOx emission limit that is less than or equal to 12 ppm and greater than 9 ppm; or

(D) Fire-tube boilers, as defined in Rule 1146.1 paragraph (b)(7), fired on natural gas subject to Rule 1146.1 subparagraph (c)(1)(F) complying with a previous NOx emission limit that is less than or equal to 9 ppm; or

(E) Thermal fluid heaters, as defined in Rule 1146 paragraph (b)(26), subject to Rule 1146 subparagraph (c)(1)(L) complying with a previous NOx emission limit that is less than or equal to 20 ppm; or

(F) Thermal fluid heaters, as defined in Rule 1146.1 paragraph (b)(22), subject to Rule 1146.1 subparagraph (c)(1)(G) complying with a previous NOx emission limit that is less than or equal to 20 ppm.

(6) Notwithstanding paragraph (~~d~~e)(1), by December 7, 2033 or when 50 percent or more of the unit's burners are replaced, whichever is earlier, the owner or operator that has installed, modified, or has been issued a South Coast AQMD~~SCAQMD~~ Permit to Construct or Permit to Operate prior to December 7, 2018 for the following units shall not operate in a manner that discharges NOx emissions (reference at 3 percent volume stack gas oxygen on a dry basis averaged over a period of 15 consecutive minutes) in excess of:

(A) 7 ppm for Rule 1146 Group I units operating without air pollution control equipment for the after treatment of the emissions in the exhaust complying with a previous NOx emission limit of 7 ppm or less and greater than 5 ppm; or

(B) 9 ppm for Rule 1146 Group III or Rule 1146.1 natural gas fired units complying with a previous NOx emission limit of 12 ppm or less and greater than 9 ppm.

(7) The owner or operator of any Rule 1146 Group I unit complying with the requirements specified in subparagraph (~~d~~e)(6)(A) that exceeds 300,000 therms of annual heat input from all fuels used shall:

(A) within 4 months after exceeding 300,000 therms of annual heat input, submit complete South Coast AQMD~~SCAQMD~~ permit applications for the unit that does not meet the applicable NOx concentration limit specified in paragraph (~~d~~e)(3); and

(B) within 18 months after exceeding 300,000 therms of annual heat input, demonstrate and maintain compliance with the applicable NOx concentration limit specified in paragraph (~~d~~e)(3) for the life of the unit.

(8) Any unit at a RECLAIM or former RECLAIM facility that is subject to a NOx emission limit in a different rule for an industry-specific category is not subject to the requirements contained in this subdivision.

(~~e~~f) The applicable monitoring, reporting, and recordkeeping requirements are as follows:

(1) For Title V facilities, an owner or operator of a RECLAIM facility shall comply with the monitoring, reporting, and recordkeeping requirements specified in Rule 2012.

(2) Except for Title V facilities, the owner or operator of a RECLAIM facility that becomes a former RECLAIM facility shall comply with the monitoring, reporting, and recordkeeping requirements in the applicable rule(s) as specified in subdivision (b) upon the date the facility becomes a former RECLAIM facility.

APPENDIX B

CalEEMod Files And Assumptions

APPENDIX B-1

CalEEMod Files and Assumptions

PAR1110.2 Construction: SCR or NSCR Modification

PAR1110.2_Construction_modify existing SCR or NSCR system

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_modify existing SCR or NSCR system - South Coast AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Demolition: 2 days; Building Construction: 10 days

Off-road Equipment - Cranes (1): 2 hours per day; Forklifts (1): 4 hours per day; Welders (1): 6 hours per day; Aerial Lifts (1): 4 hours per day; Tractors/Loaders/Backhoe (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Tractors/loaders/backhoes (1): 6 hours per day

Off-road Equipment -

Trips and VMT - Demolition: 4 Worker Trips, 0 Vendor Trips, 1 Hauling Trips
Building Construction: 4 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	15.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	3.5300e-003	0.0284	0.0271	5.0000e-005	3.0000e-004	1.5200e-003	1.8200e-003	8.0000e-005	1.4400e-003	1.5200e-003	0.0000	3.8632	3.8632	8.7000e-004	0.0000	3.8851
Maximum	**3.5300e-003**	**0.0284**	**0.0271**	**5.0000e-005**	**3.0000e-004**	**1.5200e-003**	**1.8200e-003**	**8.0000e-005**	**1.4400e-003**	**1.5200e-003**	**0.0000**	**3.8632**	**3.8632**	**8.7000e-004**	**0.0000**	**3.8851**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	3.5300e-003	0.0284	0.0271	5.0000e-005	3.0000e-004	1.5200e-003	1.8200e-003	8.0000e-005	1.4400e-003	1.5200e-003	0.0000	3.8632	3.8632	8.7000e-004	0.0000	3.8851
Maximum	**3.5300e-003**	**0.0284**	**0.0271**	**5.0000e-005**	**3.0000e-004**	**1.5200e-003**	**1.8200e-003**	**8.0000e-005**	**1.4400e-003**	**1.5200e-003**	**0.0000**	**3.8632**	**3.8632**	**8.7000e-004**	**0.0000**	**3.8851**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-2-2020**	**4-1-2020**	0.0265	0.0265
		Highest	0.0265	0.0265

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/3/2020	5	2	
2	Building Construction	Building Construction	1/6/2020	1/17/2020	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Aerial Lifts	1	4.00	63	0.31
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	4.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	4.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7000e-004	4.8700e-003	5.3900e-003	1.0000e-005		3.0000e-004	3.0000e-004		2.9000e-004	2.9000e-004	0.0000	0.7415	0.7415	1.0000e-004	0.0000	0.7440
Total	**5.7000e-004**	**4.8700e-003**	**5.3900e-003**	**1.0000e-005**	**0.0000**	**3.0000e-004**	**3.0000e-004**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.7415**	**0.7415**	**1.0000e-004**	**0.0000**	**0.7440**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.4000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0377	0.0377	0.0000	0.0000	0.0378
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0395	0.0395	0.0000	0.0000	0.0395
Total	**2.0000e-005**	**1.5000e-004**	**1.8000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0772**	**0.0772**	**0.0000**	**0.0000**	**0.0773**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7000e-004	4.8700e-003	5.3900e-003	1.0000e-005		3.0000e-004	3.0000e-004		2.9000e-004	2.9000e-004	0.0000	0.7415	0.7415	1.0000e-004	0.0000	0.7440
Total	**5.7000e-004**	**4.8700e-003**	**5.3900e-003**	**1.0000e-005**	**0.0000**	**3.0000e-004**	**3.0000e-004**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.7415**	**0.7415**	**1.0000e-004**	**0.0000**	**0.7440**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.4000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0377	0.0377	0.0000	0.0000	0.0378
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0395	0.0395	0.0000	0.0000	0.0395
Total	**2.0000e-005**	**1.5000e-004**	**1.8000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0772**	**0.0772**	**0.0000**	**0.0000**	**0.0773**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8300e-003	0.0227	0.0206	3.0000e-005		1.2100e-003	1.2100e-003		1.1400e-003	1.1400e-003	0.0000	2.7240	2.7240	7.6000e-004	0.0000	2.7429
Total	**2.8300e-003**	**0.0227**	**0.0206**	**3.0000e-005**		**1.2100e-003**	**1.2100e-003**		**1.1400e-003**	**1.1400e-003**	**0.0000**	**2.7240**	**2.7240**	**7.6000e-004**	**0.0000**	**2.7429**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1230	0.1230	1.0000e-005	0.0000	0.1232
Worker	9.0000e-005	7.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1975	0.1975	1.0000e-005	0.0000	0.1977
Total	**1.1000e-004**	**6.0000e-004**	**8.9000e-004**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.3205**	**0.3205**	**2.0000e-005**	**0.0000**	**0.3209**

3.3 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8300e-003	0.0227	0.0206	3.0000e-005		1.2100e-003	1.2100e-003		1.1400e-003	1.1400e-003	0.0000	2.7240	2.7240	7.6000e-004	0.0000	2.7429
Total	**2.8300e-003**	**0.0227**	**0.0206**	**3.0000e-005**		**1.2100e-003**	**1.2100e-003**		**1.1400e-003**	**1.1400e-003**	**0.0000**	**2.7240**	**2.7240**	**7.6000e-004**	**0.0000**	**2.7429**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1230	0.1230	1.0000e-005	0.0000	0.1232
Worker	9.0000e-005	7.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1975	0.1975	1.0000e-005	0.0000	0.1977
Total	**1.1000e-004**	**6.0000e-004**	**8.9000e-004**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.3205**	**0.3205**	**2.0000e-005**	**0.0000**	**0.3209**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_modify existing SCR or NSCR system

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_modify existing SCR or NSCR system - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Demolition: 2 days; Building Construction: 10 days

Off-road Equipment - Cranes (1): 2 hours per day; Forklifts (1): 4 hours per day; Welders (1): 6 hours per day; Aerial Lifts (1): 4 hours per day; Tractors/Loaders/Backhoe (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Tractors/loaders/backhoes (1): 6 hours per day

Off-road Equipment -

Trips and VMT - Demolition: 4 Worker Trips, 0 Vendor Trips, 1 Hauling Trips
Building Construction: 4 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

PAR1110.2_Construction_modify existing SCR or NSCR system - South Coast AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	15.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.5966	5.0193	5.5800	9.4300e-003	0.0535	0.2984	0.3519	0.0143	0.2904	0.3046	0.0000	905.0197	905.0197	0.1699	0.0000	907.8780
Maximum	**0.5966**	**5.0193**	**5.5800**	**9.4300e-003**	**0.0535**	**0.2984**	**0.3519**	**0.0143**	**0.2904**	**0.3046**	**0.0000**	**905.0197**	**905.0197**	**0.1699**	**0.0000**	**907.8780**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.5966	5.0193	5.5800	9.4300e-003	0.0535	0.2984	0.3519	0.0143	0.2904	0.3046	0.0000	905.0197	905.0197	0.1699	0.0000	907.8780
Maximum	**0.5966**	**5.0193**	**5.5800**	**9.4300e-003**	**0.0535**	**0.2984**	**0.3519**	**0.0143**	**0.2904**	**0.3046**	**0.0000**	**905.0197**	**905.0197**	**0.1699**	**0.0000**	**907.8780**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/3/2020	5	2	
2	Building Construction	Building Construction	1/6/2020	1/17/2020	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Aerial Lifts	1	4.00	63	0.31
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	4.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	4.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005			0.0000			0.0000
Off-Road	0.5747	4.8711	5.3894	8.5800e-003		0.2976	0.2976		0.2896	0.2896		817.3265	817.3265	0.1102		820.0816
Total	**0.5747**	**4.8711**	**5.3894**	**8.5800e-003**	**5.0000e-005**	**0.2976**	**0.2976**	**1.0000e-005**	**0.2896**	**0.2896**		**817.3265**	**817.3265**	**0.1102**		**820.0816**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.8000e-003	0.1361	0.0271	3.9000e-004	8.7400e-003	4.4000e-004	9.1800e-003	2.3900e-003	4.2000e-004	2.8100e-003		41.9165	41.9165	2.8100e-003		41.9868
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0181	0.0122	0.1635	4.6000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		45.7767	45.7767	1.3200e-003		45.8096
Total	**0.0219**	**0.1482**	**0.1906**	**8.5000e-004**	**0.0535**	**7.8000e-004**	**0.0542**	**0.0143**	**7.3000e-004**	**0.0150**		**87.6932**	**87.6932**	**4.1300e-003**		**87.7964**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005			0.0000			0.0000
Off-Road	0.5747	4.8711	5.3894	8.5800e-003		0.2976	0.2976		0.2896	0.2896	0.0000	817.3265	817.3265	0.1102		820.0816
Total	**0.5747**	**4.8711**	**5.3894**	**8.5800e-003**	**5.0000e-005**	**0.2976**	**0.2976**	**1.0000e-005**	**0.2896**	**0.2896**	**0.0000**	**817.3265**	**817.3265**	**0.1102**		**820.0816**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.8000e-003	0.1361	0.0271	3.9000e-004	8.7400e-003	4.4000e-004	9.1800e-003	2.3900e-003	4.2000e-004	2.8100e-003		41.9165	41.9165	2.8100e-003		41.9868
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0181	0.0122	0.1635	4.6000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		45.7767	45.7767	1.3200e-003		45.8096
Total	**0.0219**	**0.1482**	**0.1906**	**8.5000e-004**	**0.0535**	**7.8000e-004**	**0.0542**	**0.0143**	**7.3000e-004**	**0.0150**		**87.6932**	**87.6932**	**4.1300e-003**		**87.7964**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5664	4.5477	4.1280	6.5100e-003		0.2428	0.2428		0.2285	0.2285		600.5432	600.5432	0.1669		604.7157
Total	**0.5664**	**4.5477**	**4.1280**	**6.5100e-003**		**0.2428**	**0.2428**		**0.2285**	**0.2285**		**600.5432**	**600.5432**	**0.1669**		**604.7157**

3.3 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0181	0.0122	0.1635	4.6000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		45.7767	45.7767	1.3200e-003		45.8096
Total	**0.0214**	**0.1171**	**0.1885**	**7.2000e-004**	**0.0511**	**8.6000e-004**	**0.0520**	**0.0137**	**8.1000e-004**	**0.0145**		**73.2216**	**73.2216**	**3.0400e-003**		**73.2975**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5664	4.5477	4.1280	6.5100e-003		0.2428	0.2428		0.2285	0.2285	0.0000	600.5432	600.5432	0.1669		604.7157
Total	**0.5664**	**4.5477**	**4.1280**	**6.5100e-003**		**0.2428**	**0.2428**		**0.2285**	**0.2285**	**0.0000**	**600.5432**	**600.5432**	**0.1669**		**604.7157**

3.3 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0181	0.0122	0.1635	4.6000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		45.7767	45.7767	1.3200e-003		45.8096
Total	**0.0214**	**0.1171**	**0.1885**	**7.2000e-004**	**0.0511**	**8.6000e-004**	**0.0520**	**0.0137**	**8.1000e-004**	**0.0145**		**73.2216**	**73.2216**	**3.0400e-003**		**73.2975**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_modify existing SCR or NSCR system

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_modify existing SCR or NSCR system - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Demolition: 2 days; Building Construction: 10 days

Off-road Equipment - Cranes (1): 2 hours per day; Forklifts (1): 4 hours per day; Welders (1): 6 hours per day; Aerial Lifts (1): 4 hours per day; Tractors/Loaders/Backhoe (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Tractors/loaders/backhoes (1): 6 hours per day

Off-road Equipment -

Trips and VMT - Demolition: 4 Worker Trips, 0 Vendor Trips, 1 Hauling Trips
Building Construction: 4 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	15.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.5983	5.0222	5.5658	9.3900e-003	0.0535	0.2984	0.3519	0.0143	0.2904	0.3046	0.0000	901.2860	901.2860	0.1700	0.0000	904.1452
Maximum	**0.5983**	**5.0222**	**5.5658**	**9.3900e-003**	**0.0535**	**0.2984**	**0.3519**	**0.0143**	**0.2904**	**0.3046**	**0.0000**	**901.2860**	**901.2860**	**0.1700**	**0.0000**	**904.1452**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.5983	5.0222	5.5658	9.3900e-003	0.0535	0.2984	0.3519	0.0143	0.2904	0.3046	0.0000	901.2860	901.2860	0.1700	0.0000	904.1452
Maximum	**0.5983**	**5.0222**	**5.5658**	**9.3900e-003**	**0.0535**	**0.2984**	**0.3519**	**0.0143**	**0.2904**	**0.3046**	**0.0000**	**901.2860**	**901.2860**	**0.1700**	**0.0000**	**904.1452**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/3/2020	5	2	
2	Building Construction	Building Construction	1/6/2020	1/17/2020	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Aerial Lifts	1	4.00	63	0.31
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	4.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	4.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005			0.0000			0.0000
Off-Road	0.5747	4.8711	5.3894	8.5800e-003		0.2976	0.2976		0.2896	0.2896		817.3265	817.3265	0.1102		820.0816
Total	**0.5747**	**4.8711**	**5.3894**	**8.5800e-003**	**5.0000e-005**	**0.2976**	**0.2976**	**1.0000e-005**	**0.2896**	**0.2896**		**817.3265**	**817.3265**	**0.1102**		**820.0816**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9100e-003	0.1378	0.0292	3.8000e-004	8.7400e-003	4.5000e-004	9.1800e-003	2.3900e-003	4.3000e-004	2.8200e-003		41.1449	41.1449	2.9300e-003		41.2183
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0197	0.0133	0.1472	4.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		42.8146	42.8146	1.2300e-003		42.8453
Total	**0.0237**	**0.1511**	**0.1764**	**8.1000e-004**	**0.0535**	**7.9000e-004**	**0.0542**	**0.0143**	**7.4000e-004**	**0.0150**		**83.9595**	**83.9595**	**4.1600e-003**		**84.0636**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005			0.0000			0.0000
Off-Road	0.5747	4.8711	5.3894	8.5800e-003		0.2976	0.2976		0.2896	0.2896	0.0000	817.3265	817.3265	0.1102		820.0816
Total	**0.5747**	**4.8711**	**5.3894**	**8.5800e-003**	**5.0000e-005**	**0.2976**	**0.2976**	**1.0000e-005**	**0.2896**	**0.2896**	**0.0000**	**817.3265**	**817.3265**	**0.1102**		**820.0816**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9100e-003	0.1378	0.0292	3.8000e-004	8.7400e-003	4.5000e-004	9.1800e-003	2.3900e-003	4.3000e-004	2.8200e-003		41.1449	41.1449	2.9300e-003		41.2183
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0197	0.0133	0.1472	4.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		42.8146	42.8146	1.2300e-003		42.8453
Total	**0.0237**	**0.1511**	**0.1764**	**8.1000e-004**	**0.0535**	**7.9000e-004**	**0.0542**	**0.0143**	**7.4000e-004**	**0.0150**		**83.9595**	**83.9595**	**4.1600e-003**		**84.0636**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5664	4.5477	4.1280	6.5100e-003		0.2428	0.2428		0.2285	0.2285		600.5432	600.5432	0.1669		604.7157
Total	**0.5664**	**4.5477**	**4.1280**	**6.5100e-003**		**0.2428**	**0.2428**		**0.2285**	**0.2285**		**600.5432**	**600.5432**	**0.1669**		**604.7157**

3.3 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0197	0.0133	0.1472	4.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		42.8146	42.8146	1.2300e-003		42.8453
Total	**0.0232**	**0.1182**	**0.1751**	**6.8000e-004**	**0.0511**	**8.7000e-004**	**0.0520**	**0.0137**	**8.1000e-004**	**0.0145**		**69.4659**	**69.4659**	**3.0800e-003**		**69.5429**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5664	4.5477	4.1280	6.5100e-003		0.2428	0.2428		0.2285	0.2285	0.0000	600.5432	600.5432	0.1669		604.7157
Total	**0.5664**	**4.5477**	**4.1280**	**6.5100e-003**		**0.2428**	**0.2428**		**0.2285**	**0.2285**	**0.0000**	**600.5432**	**600.5432**	**0.1669**		**604.7157**

3.3 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0197	0.0133	0.1472	4.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		42.8146	42.8146	1.2300e-003		42.8453
Total	**0.0232**	**0.1182**	**0.1751**	**6.8000e-004**	**0.0511**	**8.7000e-004**	**0.0520**	**0.0137**	**8.1000e-004**	**0.0145**		**69.4659**	**69.4659**	**3.0800e-003**		**69.5429**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B-2

CalEEMod Files and Assumptions

PAR1110.2 Construction: SCR System and Associated Ammonia Tank

PAR1110.2_Construction_SCR and NH3 Tank

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - SCR: Demolition: 10 days; Building Construction: 60 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (1): 6 hours per day; Generator Sets (1): 8 hours per day; Welders (2): 7 hours per day; Aerial Lifts (1): 8 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Cranes (1): 2 hours per day; Forklift (2): 8 hours per day

Off-road Equipment - Cement and Mortar Mixers (1): 6 hours per day; Paving Equipment (1): 8 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 8 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 8 hours per day; Trenchers (1): 8 hours per day

Trips and VMT - Demolition: 8 Worker Trips, 0 Vendor Trips, 4 Hauling Trips
Building Construction: 15 Worker Trips, 7 Vendor Trips, 0 Hauling
Paving: 8 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	60.00
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	7.00
tblTripsAndVMT	WorkerTripNumber	18.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0467	0.3598	0.3472	6.5000e-004	6.9500e-003	0.0181	0.0250	1.8800e-003	0.0175	0.0194	0.0000	55.0142	55.0142	8.5100e-003	0.0000	55.2270
Maximum	**0.0467**	**0.3598**	**0.3472**	**6.5000e-004**	**6.9500e-003**	**0.0181**	**0.0250**	**1.8800e-003**	**0.0175**	**0.0194**	**0.0000**	**55.0142**	**55.0142**	**8.5100e-003**	**0.0000**	**55.2270**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0467	0.3598	0.3472	6.5000e-004	6.9500e-003	0.0181	0.0250	1.8800e-003	0.0175	0.0194	0.0000	55.0142	55.0142	8.5100e-003	0.0000	55.2270
Maximum	**0.0467**	**0.3598**	**0.3472**	**6.5000e-004**	**6.9500e-003**	**0.0181**	**0.0250**	**1.8800e-003**	**0.0175**	**0.0194**	**0.0000**	**55.0142**	**55.0142**	**8.5100e-003**	**0.0000**	**55.2270**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-2-2020**	**4-1-2020**	0.3307	0.3307
2	**4-2-2020**	**7-1-2020**	0.0755	0.0755
		Highest	0.3307	0.3307

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/15/2020	5	10	
2	Building Construction	Building Construction	1/23/2020	4/15/2020	5	60	
3	Paving	Paving	4/16/2020	4/22/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	2.00	231	0.29
Demolition	Forklifts	2	8.00	89	0.20
Building Construction	Aerial Lifts	1	8.00	63	0.31
Building Construction	Cranes	1	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	7.00	84	0.74
Building Construction	Welders	2	7.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	8.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-003	0.0362	0.0329	5.0000e-005		2.2400e-003	2.2400e-003		2.1400e-003	2.1400e-003	0.0000	4.6649	4.6649	8.1000e-004	0.0000	4.6851
Total	**4.1000e-003**	**0.0362**	**0.0329**	**5.0000e-005**	**0.0000**	**2.2400e-003**	**2.2400e-003**	**0.0000**	**2.1400e-003**	**2.1400e-003**	**0.0000**	**4.6649**	**4.6649**	**8.1000e-004**	**0.0000**	**4.6851**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	1.1000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1509	0.1509	1.0000e-005	0.0000	0.1512
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.4000e-004	1.5100e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3951	0.3951	1.0000e-005	0.0000	0.3954
Total	**2.0000e-004**	**7.0000e-004**	**1.6200e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.5460**	**0.5460**	**2.0000e-005**	**0.0000**	**0.5465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-003	0.0362	0.0329	5.0000e-005		2.2400e-003	2.2400e-003		2.1400e-003	2.1400e-003	0.0000	4.6649	4.6649	8.1000e-004	0.0000	4.6851
Total	**4.1000e-003**	**0.0362**	**0.0329**	**5.0000e-005**	**0.0000**	**2.2400e-003**	**2.2400e-003**	**0.0000**	**2.1400e-003**	**2.1400e-003**	**0.0000**	**4.6649**	**4.6649**	**8.1000e-004**	**0.0000**	**4.6851**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	1.1000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1509	0.1509	1.0000e-005	0.0000	0.1512
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.4000e-004	1.5100e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3951	0.3951	1.0000e-005	0.0000	0.3954
Total	**2.0000e-004**	**7.0000e-004**	**1.6200e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.5460**	**0.5460**	**2.0000e-005**	**0.0000**	**0.5465**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0380	0.2830	0.2732	4.6000e-004		0.0148	0.0148		0.0144	0.0144	0.0000	37.8685	37.8685	6.5500e-003	0.0000	38.0323
Total	**0.0380**	**0.2830**	**0.2732**	**4.6000e-004**		**0.0148**	**0.0148**		**0.0144**	**0.0144**	**0.0000**	**37.8685**	**37.8685**	**6.5500e-003**	**0.0000**	**38.0323**

3.3 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-004	0.0224	5.5500e-003	5.0000e-005	1.3200e-003	1.1000e-004	1.4300e-003	3.8000e-004	1.1000e-004	4.9000e-004	0.0000	5.1650	5.1650	3.4000e-004	0.0000	5.1735
Worker	2.0100e-003	1.5400e-003	0.0170	5.0000e-005	4.9400e-003	4.0000e-005	4.9800e-003	1.3100e-003	4.0000e-005	1.3500e-003	0.0000	4.4445	4.4445	1.3000e-004	0.0000	4.4477
Total	**2.7100e-003**	**0.0240**	**0.0226**	**1.0000e-004**	**6.2600e-003**	**1.5000e-004**	**6.4100e-003**	**1.6900e-003**	**1.5000e-004**	**1.8400e-003**	**0.0000**	**9.6095**	**9.6095**	**4.7000e-004**	**0.0000**	**9.6212**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0380	0.2830	0.2732	4.6000e-004		0.0148	0.0148		0.0144	0.0144	0.0000	37.8685	37.8685	6.5500e-003	0.0000	38.0322
Total	**0.0380**	**0.2830**	**0.2732**	**4.6000e-004**		**0.0148**	**0.0148**		**0.0144**	**0.0144**	**0.0000**	**37.8685**	**37.8685**	**6.5500e-003**	**0.0000**	**38.0322**

3.3 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-004	0.0224	5.5500e-003	5.0000e-005	1.3200e-003	1.1000e-004	1.4300e-003	3.8000e-004	1.1000e-004	4.9000e-004	0.0000	5.1650	5.1650	3.4000e-004	0.0000	5.1735
Worker	2.0100e-003	1.5400e-003	0.0170	5.0000e-005	4.9400e-003	4.0000e-005	4.9800e-003	1.3100e-003	4.0000e-005	1.3500e-003	0.0000	4.4445	4.4445	1.3000e-004	0.0000	4.4477
Total	**2.7100e-003**	**0.0240**	**0.0226**	**1.0000e-004**	**6.2600e-003**	**1.5000e-004**	**6.4100e-003**	**1.6900e-003**	**1.5000e-004**	**1.8400e-003**	**0.0000**	**9.6095**	**9.6095**	**4.7000e-004**	**0.0000**	**9.6212**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6000e-003	0.0159	0.0162	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	2.1278	2.1278	6.6000e-004	0.0000	2.1443
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.6000e-003**	**0.0159**	**0.0162**	**2.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.1000e-004**	**8.1000e-004**	**0.0000**	**2.1278**	**2.1278**	**6.6000e-004**	**0.0000**	**2.1443**

3.4 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1975	0.1975	1.0000e-005	0.0000	0.1977
Total	**9.0000e-005**	**7.0000e-005**	**7.6000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1975**	**0.1975**	**1.0000e-005**	**0.0000**	**0.1977**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6000e-003	0.0159	0.0162	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	2.1278	2.1278	6.6000e-004	0.0000	2.1443
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.6000e-003**	**0.0159**	**0.0162**	**2.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.1000e-004**	**8.1000e-004**	**0.0000**	**2.1278**	**2.1278**	**6.6000e-004**	**0.0000**	**2.1443**

3.4 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1975	0.1975	1.0000e-005	0.0000	0.1977
Total	**9.0000e-005**	**7.0000e-005**	**7.6000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1975**	**0.1975**	**1.0000e-005**	**0.0000**	**0.1977**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_SCR and NH3 Tank
South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - SCR: Demolition: 10 days; Building Construction: 60 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (1): 6 hours per day; Generator Sets (1): 8 hours per day; Welders (2): 7 hours per day; Aerial Lifts (1): 8 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Cranes (1): 2 hours per day; Forklift (2): 8 hours per day

Off-road Equipment - Cement and Mortar Mixers (1): 6 hours per day; Paving Equipment (1): 8 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 8 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 8 hours per day; Trenchers (1): 8 hours per day

Trips and VMT - Demolition: 8 Worker Trips, 0 Vendor Trips, 4 Hauling Trips
Building Construction: 15 Worker Trips, 7 Vendor Trips, 0 Hauling
Paving: 8 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	60.00
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	7.00
tblTripsAndVMT	WorkerTripNumber	18.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3563	10.2124	9.8955	0.0187	0.2125	0.4989	0.7113	0.0574	0.4850	0.5423	0.0000	1,755.2069	1,755.2069	0.2940	0.0000	1,761.6478
Maximum	**1.3563**	**10.2124**	**9.8955**	**0.0187**	**0.2125**	**0.4989**	**0.7113**	**0.0574**	**0.4850**	**0.5423**	**0.0000**	**1,755.2069**	**1,755.2069**	**0.2940**	**0.0000**	**1,761.6478**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3563	10.2124	9.8955	0.0187	0.2125	0.4989	0.7113	0.0574	0.4850	0.5423	0.0000	1,755.2069	1,755.2069	0.2940	0.0000	1,761.6478
Maximum	**1.3563**	**10.2124**	**9.8955**	**0.0187**	**0.2125**	**0.4989**	**0.7113**	**0.0574**	**0.4850**	**0.5423**	**0.0000**	**1,755.2069**	**1,755.2069**	**0.2940**	**0.0000**	**1,761.6478**

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/15/2020	5	10	
2	Building Construction	Building Construction	1/23/2020	4/15/2020	5	60	
3	Paving	Paving	4/16/2020	4/22/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	2.00	231	0.29
Demolition	Forklifts	2	8.00	89	0.20
Building Construction	Aerial Lifts	1	8.00	63	0.31
Building Construction	Cranes	1	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	7.00	84	0.74
Building Construction	Welders	2	7.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	8.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8196	7.2415	6.5759	0.0108		0.4470	0.4470		0.4271	0.4271		1,028.4237	1,028.4237	0.1785		1,032.8856
Total	**0.8196**	**7.2415**	**6.5759**	**0.0108**	**1.0000e-005**	**0.4470**	**0.4471**	**0.0000**	**0.4271**	**0.4271**		**1,028.4237**	**1,028.4237**	**0.1785**		**1,032.8856**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Hauling	3.0400e-003	0.1089	0.0217	3.1000e-004	6.9900e-003	3.5000e-004	7.3400e-003	1.9200e-003	3.4000e-004	2.2500e-003		33.5332	33.5332	2.2500e-003		33.5894
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.0392**	**0.1332**	**0.3487**	**1.2300e-003**	**0.0964**	**1.0300e-003**	**0.0974**	**0.0256**	**9.6000e-004**	**0.0266**		**125.0866**	**125.0866**	**4.8800e-003**		**125.2086**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8196	7.2415	6.5759	0.0108		0.4470	0.4470		0.4271	0.4271	0.0000	1,028.4237	1,028.4237	0.1785		1,032.8856
Total	**0.8196**	**7.2415**	**6.5759**	**0.0108**	**1.0000e-005**	**0.4470**	**0.4471**	**0.0000**	**0.4271**	**0.4271**	**0.0000**	**1,028.4237**	**1,028.4237**	**0.1785**		**1,032.8856**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.0400e-003	0.1089	0.0217	3.1000e-004	6.9900e-003	3.5000e-004	7.3400e-003	1.9200e-003	3.4000e-004	2.2500e-003		33.5332	33.5332	2.2500e-003		33.5894
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.0392**	**0.1332**	**0.3487**	**1.2300e-003**	**0.0964**	**1.0300e-003**	**0.0974**	**0.0256**	**9.6000e-004**	**0.0266**		**125.0866**	**125.0866**	**4.8800e-003**		**125.2086**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2655	9.4322	9.1073	0.0152		0.4939	0.4939		0.4803	0.4803		1,391.4304	1,391.4304	0.2406		1,397.4463
Total	**1.2655**	**9.4322**	**9.1073**	**0.0152**		**0.4939**	**0.4939**		**0.4803**	**0.4803**		**1,391.4304**	**1,391.4304**	**0.2406**		**1,397.4463**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0230	0.7346	0.1749	1.8000e-003	0.0448	3.6400e-003	0.0484	0.0129	3.4800e-003	0.0164		192.1139	192.1139	0.0121		192.4155
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**0.0909**	**0.7802**	**0.7881**	**3.5200e-003**	**0.2125**	**4.9100e-003**	**0.2174**	**0.0574**	**4.6500e-003**	**0.0620**		**363.7765**	**363.7765**	**0.0170**		**364.2015**

3.3 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2655	9.4322	9.1073	0.0152		0.4939	0.4939		0.4803	0.4803	0.0000	1,391.4304	1,391.4304	0.2406		1,397.4463
Total	**1.2655**	**9.4322**	**9.1073**	**0.0152**		**0.4939**	**0.4939**		**0.4803**	**0.4803**	**0.0000**	**1,391.4304**	**1,391.4304**	**0.2406**		**1,397.4463**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0230	0.7346	0.1749	1.8000e-003	0.0448	3.6400e-003	0.0484	0.0129	3.4800e-003	0.0164		192.1139	192.1139	0.0121		192.4155
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**0.0909**	**0.7802**	**0.7881**	**3.5200e-003**	**0.2125**	**4.9100e-003**	**0.2174**	**0.0574**	**4.6500e-003**	**0.0620**		**363.7765**	**363.7765**	**0.0170**		**364.2015**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6404	6.3578	6.4612	9.8900e-003		0.3517	0.3517		0.3248	0.3248		938.2008	938.2008	0.2913		945.4839
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6404**	**6.3578**	**6.4612**	**9.8900e-003**		**0.3517**	**0.3517**		**0.3248**	**0.3248**		**938.2008**	**938.2008**	**0.2913**		**945.4839**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.0362**	**0.0243**	**0.3271**	**9.2000e-004**	**0.0894**	**6.8000e-004**	**0.0901**	**0.0237**	**6.2000e-004**	**0.0243**		**91.5534**	**91.5534**	**2.6300e-003**		**91.6192**

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6404	6.3578	6.4612	9.8900e-003		0.3517	0.3517		0.3248	0.3248	0.0000	938.2008	938.2008	0.2913		945.4839
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6404**	**6.3578**	**6.4612**	**9.8900e-003**		**0.3517**	**0.3517**		**0.3248**	**0.3248**	**0.0000**	**938.2008**	**938.2008**	**0.2913**		**945.4839**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.0362**	**0.0243**	**0.3271**	**9.2000e-004**	**0.0894**	**6.8000e-004**	**0.0901**	**0.0237**	**6.2000e-004**	**0.0243**		**91.5534**	**91.5534**	**2.6300e-003**		**91.6192**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_SCR and NH3 Tank

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - SCR: Demolition: 10 days; Building Construction: 60 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (1): 6 hours per day; Generator Sets (1): 8 hours per day; Welders (2): 7 hours per day; Aerial Lifts (1): 8 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Cranes (1): 2 hours per day; Forklift (2): 8 hours per day

Off-road Equipment - Cement and Mortar Mixers (1): 6 hours per day; Paving Equipment (1): 8 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 8 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 8 hours per day; Trenchers (1): 8 hours per day

Trips and VMT - Demolition: 8 Worker Trips, 0 Vendor Trips, 4 Hauling Trips
Building Construction: 15 Worker Trips, 7 Vendor Trips, 0 Hauling
Paving: 8 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	60.00
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	7.00
tblTripsAndVMT	WorkerTripNumber	18.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3636	10.2159	9.8545	0.0186	0.2125	0.4989	0.7114	0.0574	0.4850	0.5424	0.0000	1,738.5441	1,738.5441	0.2938	0.0000	1,744.9990
Maximum	**1.3636**	**10.2159**	**9.8545**	**0.0186**	**0.2125**	**0.4989**	**0.7114**	**0.0574**	**0.4850**	**0.5424**	**0.0000**	**1,738.5441**	**1,738.5441**	**0.2938**	**0.0000**	**1,744.9990**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3636	10.2159	9.8545	0.0186	0.2125	0.4989	0.7114	0.0574	0.4850	0.5424	0.0000	1,738.5441	1,738.5441	0.2938	0.0000	1,744.9990
Maximum	**1.3636**	**10.2159**	**9.8545**	**0.0186**	**0.2125**	**0.4989**	**0.7114**	**0.0574**	**0.4850**	**0.5424**	**0.0000**	**1,738.5441**	**1,738.5441**	**0.2938**	**0.0000**	**1,744.9990**

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/15/2020	5	10	
2	Building Construction	Building Construction	1/23/2020	4/15/2020	5	60	
3	Paving	Paving	4/16/2020	4/22/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	2.00	231	0.29
Demolition	Forklifts	2	8.00	89	0.20
Building Construction	Aerial Lifts	1	8.00	63	0.31
Building Construction	Cranes	1	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	7.00	84	0.74
Building Construction	Welders	2	7.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	8.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8196	7.2415	6.5759	0.0108		0.4470	0.4470		0.4271	0.4271		1,028.4237	1,028.4237	0.1785		1,032.8856
Total	**0.8196**	**7.2415**	**6.5759**	**0.0108**	**1.0000e-005**	**0.4470**	**0.4471**	**0.0000**	**0.4271**	**0.4271**		**1,028.4237**	**1,028.4237**	**0.1785**		**1,032.8856**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1300e-003	0.1103	0.0233	3.0000e-004	6.9900e-003	3.6000e-004	7.3500e-003	1.9200e-003	3.4000e-004	2.2600e-003		32.9159	32.9159	2.3500e-003		32.9746
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.0426**	**0.1369**	**0.3178**	**1.1600e-003**	**0.0964**	**1.0400e-003**	**0.0975**	**0.0256**	**9.6000e-004**	**0.0266**		**118.5451**	**118.5451**	**4.8100e-003**		**118.6652**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8196	7.2415	6.5759	0.0108		0.4470	0.4470		0.4271	0.4271	0.0000	1,028.4237	1,028.4237	0.1785		1,032.8856
Total	**0.8196**	**7.2415**	**6.5759**	**0.0108**	**1.0000e-005**	**0.4470**	**0.4471**	**0.0000**	**0.4271**	**0.4271**	**0.0000**	**1,028.4237**	**1,028.4237**	**0.1785**		**1,032.8856**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1300e-003	0.1103	0.0233	3.0000e-004	6.9900e-003	3.6000e-004	7.3500e-003	1.9200e-003	3.4000e-004	2.2600e-003		32.9159	32.9159	2.3500e-003		32.9746
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.0426**	**0.1369**	**0.3178**	**1.1600e-003**	**0.0964**	**1.0400e-003**	**0.0975**	**0.0256**	**9.6000e-004**	**0.0266**		**118.5451**	**118.5451**	**4.8100e-003**		**118.6652**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2655	9.4322	9.1073	0.0152		0.4939	0.4939		0.4803	0.4803		1,391.4304	1,391.4304	0.2406		1,397.4463
Total	**1.2655**	**9.4322**	**9.1073**	**0.0152**		**0.4939**	**0.4939**		**0.4803**	**0.4803**		**1,391.4304**	**1,391.4304**	**0.2406**		**1,397.4463**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0241	0.7338	0.1950	1.7500e-003	0.0448	3.6900e-003	0.0485	0.0129	3.5300e-003	0.0164		186.5590	186.5590	0.0130		186.8828
Worker	0.0740	0.0500	0.5521	1.6100e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		160.5547	160.5547	4.6000e-003		160.6699
Total	**0.0981**	**0.7837**	**0.7471**	**3.3600e-003**	**0.2125**	**4.9600e-003**	**0.2174**	**0.0574**	**4.7000e-003**	**0.0621**		**347.1137**	**347.1137**	**0.0176**		**347.5527**

3.3 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2655	9.4322	9.1073	0.0152		0.4939	0.4939		0.4803	0.4803	0.0000	1,391.4304	1,391.4304	0.2406		1,397.4463
Total	**1.2655**	**9.4322**	**9.1073**	**0.0152**		**0.4939**	**0.4939**		**0.4803**	**0.4803**	**0.0000**	**1,391.4304**	**1,391.4304**	**0.2406**		**1,397.4463**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0241	0.7338	0.1950	1.7500e-003	0.0448	3.6900e-003	0.0485	0.0129	3.5300e-003	0.0164		186.5590	186.5590	0.0130		186.8828
Worker	0.0740	0.0500	0.5521	1.6100e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		160.5547	160.5547	4.6000e-003		160.6699
Total	**0.0981**	**0.7837**	**0.7471**	**3.3600e-003**	**0.2125**	**4.9600e-003**	**0.2174**	**0.0574**	**4.7000e-003**	**0.0621**		**347.1137**	**347.1137**	**0.0176**		**347.5527**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6404	6.3578	6.4612	9.8900e-003		0.3517	0.3517		0.3248	0.3248		938.2008	938.2008	0.2913		945.4839
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6404**	**6.3578**	**6.4612**	**9.8900e-003**		**0.3517**	**0.3517**		**0.3248**	**0.3248**		**938.2008**	**938.2008**	**0.2913**		**945.4839**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.0395**	**0.0266**	**0.2945**	**8.6000e-004**	**0.0894**	**6.8000e-004**	**0.0901**	**0.0237**	**6.2000e-004**	**0.0243**		**85.6292**	**85.6292**	**2.4600e-003**		**85.6906**

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6404	6.3578	6.4612	9.8900e-003		0.3517	0.3517		0.3248	0.3248	0.0000	938.2008	938.2008	0.2913		945.4839
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6404**	**6.3578**	**6.4612**	**9.8900e-003**		**0.3517**	**0.3517**		**0.3248**	**0.3248**	**0.0000**	**938.2008**	**938.2008**	**0.2913**		**945.4839**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.0395**	**0.0266**	**0.2945**	**8.6000e-004**	**0.0894**	**6.8000e-004**	**0.0901**	**0.0237**	**6.2000e-004**	**0.0243**		**85.6292**	**85.6292**	**2.4600e-003**		**85.6906**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

PAR1110.2_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Winter

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B-3

CalEEMod Files and Assumptions

PAR1110.2 Construction: Engine Repower and SCR System and Associated Ammonia Tank

PAR1110.2_Construction_Stationary Gas Turbine & New SCR

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_Stationary Gas Turbine & New SCR - South Coast AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 150 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (2): 6 hours per day; Generator Sets (1): 8 hours per day; Welders (2): 4 hours per day; Aerial Lifts (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 4 hours per day; Forklifts (2): 4 hours per day; Cranes (1): 4 hours per day

Off-road Equipment - Cement and Mortar Mixers (1): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Paving Equipment (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips
Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips
Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling
Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	150.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1182	0.9832	0.8576	1.6400e-003	0.0348	0.0513	0.0862	0.0131	0.0491	0.0621	0.0000	141.2784	141.2784	0.0229	0.0000	141.8506
Maximum	**0.1182**	**0.9832**	**0.8576**	**1.6400e-003**	**0.0348**	**0.0513**	**0.0862**	**0.0131**	**0.0491**	**0.0621**	**0.0000**	**141.2784**	**141.2784**	**0.0229**	**0.0000**	**141.8506**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1182	0.9832	0.8576	1.6400e-003	0.0348	0.0513	0.0862	0.0131	0.0491	0.0621	0.0000	141.2782	141.2782	0.0229	0.0000	141.8505
Maximum	**0.1182**	**0.9832**	**0.8576**	**1.6400e-003**	**0.0348**	**0.0513**	**0.0862**	**0.0131**	**0.0491**	**0.0621**	**0.0000**	**141.2782**	**141.2782**	**0.0229**	**0.0000**	**141.8505**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2020	4-1-2020	0.4307	0.4307
2	4-2-2020	7-1-2020	0.3871	0.3871
3	7-2-2020	9-30-2020	0.2827	0.2827
		Highest	0.4307	0.4307

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/29/2020	5	20	
2	Site Preparation	Site Preparation	1/30/2020	2/5/2020	5	5	
3	Building Construction	Building Construction	2/6/2020	9/2/2020	5	150	
4	Paving	Paving	9/3/2020	9/9/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	4.00	231	0.29
Demolition	Forklifts	2	7.00	89	0.20
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Welders	2	4.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Paving Equipment	1	4.00	132	0.36
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0144	0.1393	0.0888	1.6000e-004		7.5600e-003	7.5600e-003		7.1100e-003	7.1100e-003	0.0000	14.0141	14.0141	3.1300e-003	0.0000	14.0924
Total	**0.0144**	**0.1393**	**0.0888**	**1.6000e-004**	**0.0000**	**7.5600e-003**	**7.5600e-003**	**0.0000**	**7.1100e-003**	**7.1100e-003**	**0.0000**	**14.0141**	**14.0141**	**3.1300e-003**	**0.0000**	**14.0924**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.4000e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3773	0.3773	3.0000e-005	0.0000	0.3780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.9000e-004	6.8000e-004	7.5700e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9753	1.9753	6.0000e-005	0.0000	1.9768
Total	**9.3000e-004**	**2.0800e-003**	**7.8500e-003**	**2.0000e-005**	**2.2800e-003**	**2.0000e-005**	**2.3000e-003**	**6.0000e-004**	**2.0000e-005**	**6.3000e-004**	**0.0000**	**2.3527**	**2.3527**	**9.0000e-005**	**0.0000**	**2.3547**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0144	0.1393	0.0888	1.6000e-004		7.5600e-003	7.5600e-003		7.1100e-003	7.1100e-003	0.0000	14.0140	14.0140	3.1300e-003	0.0000	14.0924
Total	**0.0144**	**0.1393**	**0.0888**	**1.6000e-004**	**0.0000**	**7.5600e-003**	**7.5600e-003**	**0.0000**	**7.1100e-003**	**7.1100e-003**	**0.0000**	**14.0140**	**14.0140**	**3.1300e-003**	**0.0000**	**14.0924**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.4000e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3773	0.3773	3.0000e-005	0.0000	0.3780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.9000e-004	6.8000e-004	7.5700e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9753	1.9753	6.0000e-005	0.0000	1.9768
Total	**9.3000e-004**	**2.0800e-003**	**7.8500e-003**	**2.0000e-005**	**2.2800e-003**	**2.0000e-005**	**2.3000e-003**	**6.0000e-004**	**2.0000e-005**	**6.3000e-004**	**0.0000**	**2.3527**	**2.3527**	**9.0000e-005**	**0.0000**	**2.3547**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0132	0.0000	0.0132	7.2400e-003	0.0000	7.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0322	0.0152	3.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	2.3535	2.3535	7.6000e-004	0.0000	2.3725
Total	**3.1500e-003**	**0.0322**	**0.0152**	**3.0000e-005**	**0.0132**	**1.7400e-003**	**0.0149**	**7.2400e-003**	**1.6000e-003**	**8.8400e-003**	**0.0000**	**2.3535**	**2.3535**	**7.6000e-004**	**0.0000**	**2.3725**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
Total	**1.1000e-004**	**9.0000e-005**	**9.5000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2469**	**0.2469**	**1.0000e-005**	**0.0000**	**0.2471**

3.3 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0132	0.0000	0.0132	7.2400e-003	0.0000	7.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0322	0.0152	3.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	2.3535	2.3535	7.6000e-004	0.0000	2.3725
Total	**3.1500e-003**	**0.0322**	**0.0152**	**3.0000e-005**	**0.0132**	**1.7400e-003**	**0.0149**	**7.2400e-003**	**1.6000e-003**	**8.8400e-003**	**0.0000**	**2.3535**	**2.3535**	**7.6000e-004**	**0.0000**	**2.3725**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
Total	**1.1000e-004**	**9.0000e-005**	**9.5000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2469**	**0.2469**	**1.0000e-005**	**0.0000**	**0.2471**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0903	0.7510	0.6636	1.1400e-003		0.0410	0.0410		0.0394	0.0394	0.0000	96.1568	96.1568	0.0173	0.0000	96.5892
Total	**0.0903**	**0.7510**	**0.6636**	**1.1400e-003**		**0.0410**	**0.0410**		**0.0394**	**0.0394**	**0.0000**	**96.1568**	**96.1568**	**0.0173**	**0.0000**	**96.5892**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0400	9.9100e-003	1.0000e-004	2.3600e-003	2.0000e-004	2.5600e-003	6.8000e-004	1.9000e-004	8.7000e-004	0.0000	9.2232	9.2232	6.1000e-004	0.0000	9.2383
Worker	6.7000e-003	5.1300e-003	0.0568	1.6000e-004	0.0165	1.3000e-004	0.0166	4.3700e-003	1.2000e-004	4.4900e-003	0.0000	14.8150	14.8150	4.3000e-004	0.0000	14.8256
Total	**7.9600e-003**	**0.0452**	**0.0667**	**2.6000e-004**	**0.0188**	**3.3000e-004**	**0.0191**	**5.0500e-003**	**3.1000e-004**	**5.3600e-003**	**0.0000**	**24.0382**	**24.0382**	**1.0400e-003**	**0.0000**	**24.0640**

3.4 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0903	0.7510	0.6636	1.1400e-003		0.0410	0.0410		0.0394	0.0394	0.0000	96.1567	96.1567	0.0173	0.0000	96.5891
Total	**0.0903**	**0.7510**	**0.6636**	**1.1400e-003**		**0.0410**	**0.0410**		**0.0394**	**0.0394**	**0.0000**	**96.1567**	**96.1567**	**0.0173**	**0.0000**	**96.5891**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0400	9.9100e-003	1.0000e-004	2.3600e-003	2.0000e-004	2.5600e-003	6.8000e-004	1.9000e-004	8.7000e-004	0.0000	9.2232	9.2232	6.1000e-004	0.0000	9.2383
Worker	6.7000e-003	5.1300e-003	0.0568	1.6000e-004	0.0165	1.3000e-004	0.0166	4.3700e-003	1.2000e-004	4.4900e-003	0.0000	14.8150	14.8150	4.3000e-004	0.0000	14.8256
Total	**7.9600e-003**	**0.0452**	**0.0667**	**2.6000e-004**	**0.0188**	**3.3000e-004**	**0.0191**	**5.0500e-003**	**3.1000e-004**	**5.3600e-003**	**0.0000**	**24.0382**	**24.0382**	**1.0400e-003**	**0.0000**	**24.0640**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3000e-003	0.0130	0.0135	2.0000e-005		7.1000e-004	7.1000e-004		6.5000e-004	6.5000e-004	0.0000	1.8078	1.8078	5.7000e-004	0.0000	1.8220
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.3000e-003**	**0.0130**	**0.0135**	**2.0000e-005**		**7.1000e-004**	**7.1000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**1.8078**	**1.8078**	**5.7000e-004**	**0.0000**	**1.8220**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0615	0.0615	0.0000	0.0000	0.0616
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
Total	**1.2000e-004**	**3.6000e-004**	**1.0200e-003**	**0.0000**	**2.9000e-004**	**0.0000**	**3.0000e-004**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.3084**	**0.3084**	**1.0000e-005**	**0.0000**	**0.3087**

3.5 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3000e-003	0.0130	0.0135	2.0000e-005		7.1000e-004	7.1000e-004		6.5000e-004	6.5000e-004	0.0000	1.8078	1.8078	5.7000e-004	0.0000	1.8220
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.3000e-003**	**0.0130**	**0.0135**	**2.0000e-005**		**7.1000e-004**	**7.1000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**1.8078**	**1.8078**	**5.7000e-004**	**0.0000**	**1.8220**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0615	0.0615	0.0000	0.0000	0.0616
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
Total	**1.2000e-004**	**3.6000e-004**	**1.0200e-003**	**0.0000**	**2.9000e-004**	**0.0000**	**3.0000e-004**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.3084**	**0.3084**	**1.0000e-005**	**0.0000**	**0.3087**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_Stationary Gas Turbine & New SCR

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_Stationary Gas Turbine & New SCR - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 150 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (2): 6 hours per day; Generator Sets (1): 8 hours per day; Welders (2): 4 hours per day; Aerial Lifts (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 4 hours per day; Forklifts (2): 4 hours per day; Cranes (1): 4 hours per day

Off-road Equipment - Cement and Mortar Mixers (1): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Paving Equipment (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips
Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips
Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling
Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	150.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.5309	14.1280	9.7903	0.0188	5.3811	0.7581	6.0762	2.9261	0.7133	3.5656	0.0000	1,815.5846	1,815.5846	0.3549	0.0000	1,824.4564
Maximum	**1.5309**	**14.1280**	**9.7903**	**0.0188**	**5.3811**	**0.7581**	**6.0762**	**2.9261**	**0.7133**	**3.5656**	**0.0000**	**1,815.5846**	**1,815.5846**	**0.3549**	**0.0000**	**1,824.4564**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.5309	14.1280	9.7903	0.0188	5.3811	0.7581	6.0762	2.9261	0.7133	3.5656	0.0000	1,815.5846	1,815.5846	0.3549	0.0000	1,824.4564
Maximum	**1.5309**	**14.1280**	**9.7903**	**0.0188**	**5.3811**	**0.7581**	**6.0762**	**2.9261**	**0.7133**	**3.5656**	**0.0000**	**1,815.5846**	**1,815.5846**	**0.3549**	**0.0000**	**1,824.4564**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/29/2020	5	20	
2	Site Preparation	Site Preparation	1/30/2020	2/5/2020	5	5	
3	Building Construction	Building Construction	2/6/2020	9/2/2020	5	150	
4	Paving	Paving	9/3/2020	9/9/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	4.00	231	0.29
Demolition	Forklifts	2	7.00	89	0.20
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Welders	2	4.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Paving Equipment	1	4.00	132	0.36
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.4367	13.9311	8.8755	0.0161		0.7559	0.7559		0.7113	0.7113		1,544.7847	1,544.7847	0.3455		1,553.4216
Total	**1.4367**	**13.9311**	**8.8755**	**0.0161**	**0.0000**	**0.7559**	**0.7559**	**0.0000**	**0.7113**	**0.7113**		**1,544.7847**	**1,544.7847**	**0.3455**		**1,553.4216**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.8000e-003	0.1361	0.0271	3.9000e-004	8.7400e-003	4.4000e-004	9.1800e-003	2.3900e-003	4.2000e-004	2.8100e-003		41.9165	41.9165	2.8100e-003		41.9868
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
Total	**0.0943**	**0.1969**	**0.8447**	**2.6900e-003**	**0.2323**	**2.1400e-003**	**0.2344**	**0.0617**	**1.9800e-003**	**0.0637**		**270.8000**	**270.8000**	**9.3900e-003**		**271.0348**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.4367	13.9311	8.8755	0.0161		0.7559	0.7559		0.7113	0.7113	0.0000	1,544.7847	1,544.7847	0.3455		1,553.4216
Total	**1.4367**	**13.9311**	**8.8755**	**0.0161**	**0.0000**	**0.7559**	**0.7559**	**0.0000**	**0.7113**	**0.7113**	**0.0000**	**1,544.7847**	**1,544.7847**	**0.3455**		**1,553.4216**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.8000e-003	0.1361	0.0271	3.9000e-004	8.7400e-003	4.4000e-004	9.1800e-003	2.3900e-003	4.2000e-004	2.8100e-003		41.9165	41.9165	2.8100e-003		41.9868
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
Total	**0.0943**	**0.1969**	**0.8447**	**2.6900e-003**	**0.2323**	**2.1400e-003**	**0.2344**	**0.0617**	**1.9800e-003**	**0.0637**		**270.8000**	**270.8000**	**9.3900e-003**		**271.0348**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387		1,037.715 0	1,037.715 0	0.3356		1,046.105 4
Total	**1.2592**	**12.8666**	**6.0732**	**0.0107**	**5.2693**	**0.6943**	**5.9636**	**2.8965**	**0.6387**	**3.5352**		**1,037.715 0**	**1,037.715 0**	**0.3356**		**1,046.105 4**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
Total	**0.0452**	**0.0304**	**0.4088**	**1.1500e-003**	**0.1118**	**8.5000e-004**	**0.1126**	**0.0296**	**7.8000e-004**	**0.0304**		**114.4418**	**114.4418**	**3.2900e-003**		**114.5240**

3.3 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387	0.0000	1,037.715 0	1,037.715 0	0.3356		1,046.105 4
Total	**1.2592**	**12.8666**	**6.0732**	**0.0107**	**5.2693**	**0.6943**	**5.9636**	**2.8965**	**0.6387**	**3.5352**	**0.0000**	**1,037.715 0**	**1,037.715 0**	**0.3356**		**1,046.105 4**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
Total	**0.0452**	**0.0304**	**0.4088**	**1.1500e-003**	**0.1118**	**8.5000e-004**	**0.1126**	**0.0296**	**7.8000e-004**	**0.0304**		**114.4418**	**114.4418**	**3.2900e-003**		**114.5240**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2037	10.0138	8.8478	0.0152		0.5464	0.5464		0.5254	0.5254		1,413.263 3	1,413.263 3	0.2542		1,419.618 9
Total	**1.2037**	**10.0138**	**8.8478**	**0.0152**		**0.5464**	**0.5464**		**0.5254**	**0.5254**		**1,413.263 3**	**1,413.263 3**	**0.2542**		**1,419.618 9**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0164	0.5247	0.1249	1.2900e-003	0.0320	2.6000e-003	0.0346	9.2100e-003	2.4900e-003	0.0117		137.2242	137.2242	8.6200e-003		137.4396
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
Total	**0.1069**	**0.5855**	**0.9426**	**3.5900e-003**	**0.2556**	**4.3000e-003**	**0.2599**	**0.0685**	**4.0500e-003**	**0.0726**		**366.1077**	**366.1077**	**0.0152**		**366.4876**

3.4 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2037	10.0138	8.8478	0.0152		0.5464	0.5464		0.5254	0.5254	0.0000	1,413.2633	1,413.2633	0.2542		1,419.6189
Total	**1.2037**	**10.0138**	**8.8478**	**0.0152**		**0.5464**	**0.5464**		**0.5254**	**0.5254**	**0.0000**	**1,413.2633**	**1,413.2633**	**0.2542**		**1,419.6189**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0164	0.5247	0.1249	1.2900e-003	0.0320	2.6000e-003	0.0346	9.2100e-003	2.4900e-003	0.0117		137.2242	137.2242	8.6200e-003		137.4396
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
Total	**0.1069**	**0.5855**	**0.9426**	**3.5900e-003**	**0.2556**	**4.3000e-003**	**0.2599**	**0.0685**	**4.0500e-003**	**0.0726**		**366.1077**	**366.1077**	**0.0152**		**366.4876**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5208	5.1964	5.3965	8.3700e-003		0.2826	0.2826		0.2608	0.2608		797.1139	797.1139	0.2495		803.3509
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5208**	**5.1964**	**5.3965**	**8.3700e-003**		**0.2826**	**0.2826**		**0.2608**	**0.2608**		**797.1139**	**797.1139**	**0.2495**		**803.3509**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
Total	**0.0485**	**0.1354**	**0.4338**	**1.4100e-003**	**0.1182**	**1.3700e-003**	**0.1195**	**0.0315**	**1.2800e-003**	**0.0328**		**141.8866**	**141.8866**	**5.0100e-003**		**142.0119**

3.5 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5208	5.1964	5.3965	8.3700e-003		0.2826	0.2826		0.2608	0.2608	0.0000	797.1139	797.1139	0.2495		803.3509
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5208**	**5.1964**	**5.3965**	**8.3700e-003**		**0.2826**	**0.2826**		**0.2608**	**0.2608**	**0.0000**	**797.1139**	**797.1139**	**0.2495**		**803.3509**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
Total	**0.0485**	**0.1354**	**0.4338**	**1.4100e-003**	**0.1182**	**1.3700e-003**	**0.1195**	**0.0315**	**1.2800e-003**	**0.0328**		**141.8866**	**141.8866**	**5.0100e-003**		**142.0119**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_Stationary Gas Turbine & New SCR

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_Stationary Gas Turbine & New SCR - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 150 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (2): 6 hours per day; Generator Sets (1): 8 hours per day; Welders (2): 4 hours per day; Aerial Lifts (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 4 hours per day; Forklifts (2): 4 hours per day; Cranes (1): 4 hours per day

Off-road Equipment - Cement and Mortar Mixers (1): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Paving Equipment (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips
Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips
Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling
Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	150.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.5393	14.1356	9.7232	0.0186	5.3811	0.7581	6.0762	2.9261	0.7133	3.5656	0.0000	1,800.0026	1,800.0026	0.3546	0.0000	1,808.8664
Maximum	**1.5393**	**14.1356**	**9.7232**	**0.0186**	**5.3811**	**0.7581**	**6.0762**	**2.9261**	**0.7133**	**3.5656**	**0.0000**	**1,800.0026**	**1,800.0026**	**0.3546**	**0.0000**	**1,808.8664**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.5393	14.1356	9.7232	0.0186	5.3811	0.7581	6.0762	2.9261	0.7133	3.5656	0.0000	1,800.0026	1,800.0026	0.3546	0.0000	1,808.8664
Maximum	**1.5393**	**14.1356**	**9.7232**	**0.0186**	**5.3811**	**0.7581**	**6.0762**	**2.9261**	**0.7133**	**3.5656**	**0.0000**	**1,800.0026**	**1,800.0026**	**0.3546**	**0.0000**	**1,808.8664**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/29/2020	5	20	
2	Site Preparation	Site Preparation	1/30/2020	2/5/2020	5	5	
3	Building Construction	Building Construction	2/6/2020	9/2/2020	5	150	
4	Paving	Paving	9/3/2020	9/9/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

PAR1110.2_Construction_Stationary Gas Turbine & New SCR - South Coast AQMD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	4.00	231	0.29
Demolition	Forklifts	2	7.00	89	0.20
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Welders	2	4.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Paving Equipment	1	4.00	132	0.36
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.4367	13.9311	8.8755	0.0161		0.7559	0.7559		0.7113	0.7113		1,544.7847	1,544.7847	0.3455		1,553.4216
Total	**1.4367**	**13.9311**	**8.8755**	**0.0161**	**0.0000**	**0.7559**	**0.7559**	**0.0000**	**0.7113**	**0.7113**		**1,544.7847**	**1,544.7847**	**0.3455**		**1,553.4216**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9100e-003	0.1378	0.0292	3.8000e-004	8.7400e-003	4.5000e-004	9.1800e-003	2.3900e-003	4.3000e-004	2.8200e-003		41.1449	41.1449	2.9300e-003		41.2183
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
Total	**0.1026**	**0.2044**	**0.7653**	**2.5300e-003**	**0.2323**	**2.1500e-003**	**0.2344**	**0.0617**	**1.9900e-003**	**0.0637**		**255.2179**	**255.2179**	**9.0700e-003**		**255.4448**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.4367	13.9311	8.8755	0.0161		0.7559	0.7559		0.7113	0.7113	0.0000	1,544.784 7	1,544.784 7	0.3455		1,553.421 6
Total	**1.4367**	**13.9311**	**8.8755**	**0.0161**	**0.0000**	**0.7559**	**0.7559**	**0.0000**	**0.7113**	**0.7113**	**0.0000**	**1,544.784 7**	**1,544.784 7**	**0.3455**		**1,553.421 6**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9100e-003	0.1378	0.0292	3.8000e-004	8.7400e-003	4.5000e-004	9.1800e-003	2.3900e-003	4.3000e-004	2.8200e-003		41.1449	41.1449	2.9300e-003		41.2183
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
Total	**0.1026**	**0.2044**	**0.7653**	**2.5300e-003**	**0.2323**	**2.1500e-003**	**0.2344**	**0.0617**	**1.9900e-003**	**0.0637**		**255.2179**	**255.2179**	**9.0700e-003**		**255.4448**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387		1,037.7150	1,037.7150	0.3356		1,046.1054
Total	**1.2592**	**12.8666**	**6.0732**	**0.0107**	**5.2693**	**0.6943**	**5.9636**	**2.8965**	**0.6387**	**3.5352**		**1,037.7150**	**1,037.7150**	**0.3356**		**1,046.1054**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
Total	**0.0494**	**0.0333**	**0.3681**	**1.0700e-003**	**0.1118**	**8.5000e-004**	**0.1126**	**0.0296**	**7.8000e-004**	**0.0304**		**107.0365**	**107.0365**	**3.0700e-003**		**107.1132**

3.3 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387	0.0000	1,037.715 0	1,037.715 0	0.3356		1,046.105 4
Total	**1.2592**	**12.8666**	**6.0732**	**0.0107**	**5.2693**	**0.6943**	**5.9636**	**2.8965**	**0.6387**	**3.5352**	**0.0000**	**1,037.715 0**	**1,037.715 0**	**0.3356**		**1,046.105 4**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
Total	**0.0494**	**0.0333**	**0.3681**	**1.0700e-003**	**0.1118**	**8.5000e-004**	**0.1126**	**0.0296**	**7.8000e-004**	**0.0304**		**107.0365**	**107.0365**	**3.0700e-003**		**107.1132**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2037	10.0138	8.8478	0.0152		0.5464	0.5464		0.5254	0.5254		1,413.2633	1,413.2633	0.2542		1,419.6189
Total	**1.2037**	**10.0138**	**8.8478**	**0.0152**		**0.5464**	**0.5464**		**0.5254**	**0.5254**		**1,413.2633**	**1,413.2633**	**0.2542**		**1,419.6189**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0172	0.5241	0.1393	1.2500e-003	0.0320	2.6400e-003	0.0346	9.2100e-003	2.5200e-003	0.0117		133.2564	133.2564	9.2500e-003		133.4877
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
Total	**0.1159**	**0.5907**	**0.8755**	**3.4000e-003**	**0.2556**	**4.3400e-003**	**0.2599**	**0.0685**	**4.0800e-003**	**0.0726**		**347.3294**	**347.3294**	**0.0154**		**347.7142**

3.4 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2037	10.0138	8.8478	0.0152		0.5464	0.5464		0.5254	0.5254	0.0000	1,413.2633	1,413.2633	0.2542		1,419.6189
Total	**1.2037**	**10.0138**	**8.8478**	**0.0152**		**0.5464**	**0.5464**		**0.5254**	**0.5254**	**0.0000**	**1,413.2633**	**1,413.2633**	**0.2542**		**1,419.6189**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0172	0.5241	0.1393	1.2500e-003	0.0320	2.6400e-003	0.0346	9.2100e-003	2.5200e-003	0.0117		133.2564	133.2564	9.2500e-003		133.4877
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
Total	**0.1159**	**0.5907**	**0.8755**	**3.4000e-003**	**0.2556**	**4.3400e-003**	**0.2599**	**0.0685**	**4.0800e-003**	**0.0726**		**347.3294**	**347.3294**	**0.0154**		**347.7142**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5208	5.1964	5.3965	8.3700e-003		0.2826	0.2826		0.2608	0.2608		797.1139	797.1139	0.2495		803.3509
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5208**	**5.1964**	**5.3965**	**8.3700e-003**		**0.2826**	**0.2826**		**0.2608**	**0.2608**		**797.1139**	**797.1139**	**0.2495**		**803.3509**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
Total	**0.0528**	**0.1381**	**0.3960**	**1.3200e-003**	**0.1182**	**1.3800e-003**	**0.1196**	**0.0315**	**1.2800e-003**	**0.0328**		**133.6878**	**133.6878**	**4.9200e-003**		**133.8108**

3.5 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5208	5.1964	5.3965	8.3700e-003		0.2826	0.2826		0.2608	0.2608	0.0000	797.1139	797.1139	0.2495		803.3509
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5208**	**5.1964**	**5.3965**	**8.3700e-003**		**0.2826**	**0.2826**		**0.2608**	**0.2608**	**0.0000**	**797.1139**	**797.1139**	**0.2495**		**803.3509**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
Total	**0.0528**	**0.1381**	**0.3960**	**1.3200e-003**	**0.1182**	**1.3800e-003**	**0.1196**	**0.0315**	**1.2800e-003**	**0.0328**		**133.6878**	**133.6878**	**4.9200e-003**		**133.8108**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

PAR1110.2_Construction_Stationary Gas Turbine & New SCR - South Coast AQMD Air District, Winter

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B-4

CalEEMod Files and Assumptions

PAR1110.2 Construction: Engine Replacement and NSCR System

PAR1110.2_Construction_IC Engine_OCS

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - IC Engine: Demolition: 10 days; Building Construction: 60 days

Off-road Equipment - Cranes (2): 4 hours per day; Welders (2): 8 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Cranes (2): 4 hours per day

Off-road Equipment -

Trips and VMT - Demolition: 8 Worker Trips, 0 Vendor Trips, 1 Hauling Trips
Building Construction: 15 Worker Trips, 4 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	60.00
tblConstructionPhase	NumDays	0.00	10.00
tblOffRoadEquipment	HorsePower	231.00	190.00
tblOffRoadEquipment	HorsePower	231.00	190.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	18.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0383	0.2806	0.2071	4.4000e-004	6.1400e-003	0.0127	0.0189	1.6500e-003	0.0122	0.0138	0.0000	36.4036	36.4036	6.8900e-003	0.0000	36.5759
Maximum	**0.0383**	**0.2806**	**0.2071**	**4.4000e-004**	**6.1400e-003**	**0.0127**	**0.0189**	**1.6500e-003**	**0.0122**	**0.0138**	**0.0000**	**36.4036**	**36.4036**	**6.8900e-003**	**0.0000**	**36.5759**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0383	0.2806	0.2071	4.4000e-004	6.1400e-003	0.0127	0.0189	1.6500e-003	0.0122	0.0138	0.0000	36.4035	36.4035	6.8900e-003	0.0000	36.5759
Maximum	**0.0383**	**0.2806**	**0.2071**	**4.4000e-004**	**6.1400e-003**	**0.0127**	**0.0189**	**1.6500e-003**	**0.0122**	**0.0138**	**0.0000**	**36.4035**	**36.4035**	**6.8900e-003**	**0.0000**	**36.5759**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-2-2020**	**4-1-2020**	0.2959	0.2959
2	**4-2-2020**	**7-1-2020**	0.0230	0.0230
		Highest	0.2959	0.2959

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/15/2020	5	10	
2	Building Construction	Building Construction	1/16/2020	4/8/2020	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	2	4.00	190	0.29
Building Construction	Cranes	2	4.00	190	0.29
Building Construction	Welders	2	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	8.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9600e-003	0.0387	0.0271	6.0000e-005		1.9000e-003	1.9000e-003		1.8300e-003	1.8300e-003	0.0000	4.7730	4.7730	8.4000e-004	0.0000	4.7942
Total	**3.9600e-003**	**0.0387**	**0.0271**	**6.0000e-005**	**0.0000**	**1.9000e-003**	**1.9000e-003**	**0.0000**	**1.8300e-003**	**1.8300e-003**	**0.0000**	**4.7730**	**4.7730**	**8.4000e-004**	**0.0000**	**4.7942**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.4000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0377	0.0377	0.0000	0.0000	0.0378
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.4000e-004	1.5100e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3951	0.3951	1.0000e-005	0.0000	0.3954
Total	**1.8000e-004**	**2.8000e-004**	**1.5400e-003**	**0.0000**	**4.5000e-004**	**0.0000**	**4.5000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4328**	**0.4328**	**1.0000e-005**	**0.0000**	**0.4332**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9600e-003	0.0387	0.0271	6.0000e-005		1.9000e-003	1.9000e-003		1.8300e-003	1.8300e-003	0.0000	4.7730	4.7730	8.4000e-004	0.0000	4.7942
Total	**3.9600e-003**	**0.0387**	**0.0271**	**6.0000e-005**	**0.0000**	**1.9000e-003**	**1.9000e-003**	**0.0000**	**1.8300e-003**	**1.8300e-003**	**0.0000**	**4.7730**	**4.7730**	**8.4000e-004**	**0.0000**	**4.7942**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.4000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0377	0.0377	0.0000	0.0000	0.0378
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.4000e-004	1.5100e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3951	0.3951	1.0000e-005	0.0000	0.3954
Total	**1.8000e-004**	**2.8000e-004**	**1.5400e-003**	**0.0000**	**4.5000e-004**	**0.0000**	**4.5000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4328**	**0.4328**	**1.0000e-005**	**0.0000**	**0.4332**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.2273	0.1582	3.0000e-004		0.0107	0.0107		0.0103	0.0103	0.0000	23.8018	23.8018	5.7100e-003	0.0000	23.9447
Total	**0.0317**	**0.2273**	**0.1582**	**3.0000e-004**		**0.0107**	**0.0107**		**0.0103**	**0.0103**	**0.0000**	**23.8018**	**23.8018**	**5.7100e-003**	**0.0000**	**23.9447**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-004	0.0128	3.1700e-003	3.0000e-005	7.6000e-004	6.0000e-005	8.2000e-004	2.2000e-004	6.0000e-005	2.8000e-004	0.0000	2.9514	2.9514	1.9000e-004	0.0000	2.9563
Worker	2.0100e-003	1.5400e-003	0.0170	5.0000e-005	4.9400e-003	4.0000e-005	4.9800e-003	1.3100e-003	4.0000e-005	1.3500e-003	0.0000	4.4445	4.4445	1.3000e-004	0.0000	4.4477
Total	**2.4100e-003**	**0.0144**	**0.0202**	**8.0000e-005**	**5.7000e-003**	**1.0000e-004**	**5.8000e-003**	**1.5300e-003**	**1.0000e-004**	**1.6300e-003**	**0.0000**	**7.3959**	**7.3959**	**3.2000e-004**	**0.0000**	**7.4040**

3.3 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.2273	0.1582	3.0000e-004		0.0107	0.0107		0.0103	0.0103	0.0000	23.8018	23.8018	5.7100e-003	0.0000	23.9446
Total	**0.0317**	**0.2273**	**0.1582**	**3.0000e-004**		**0.0107**	**0.0107**		**0.0103**	**0.0103**	**0.0000**	**23.8018**	**23.8018**	**5.7100e-003**	**0.0000**	**23.9446**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-004	0.0128	3.1700e-003	3.0000e-005	7.6000e-004	6.0000e-005	8.2000e-004	2.2000e-004	6.0000e-005	2.8000e-004	0.0000	2.9514	2.9514	1.9000e-004	0.0000	2.9563
Worker	2.0100e-003	1.5400e-003	0.0170	5.0000e-005	4.9400e-003	4.0000e-005	4.9800e-003	1.3100e-003	4.0000e-005	1.3500e-003	0.0000	4.4445	4.4445	1.3000e-004	0.0000	4.4477
Total	**2.4100e-003**	**0.0144**	**0.0202**	**8.0000e-005**	**5.7000e-003**	**1.0000e-004**	**5.8000e-003**	**1.5300e-003**	**1.0000e-004**	**1.6300e-003**	**0.0000**	**7.3959**	**7.3959**	**3.2000e-004**	**0.0000**	**7.4040**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_IC Engine_OCS

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR1110.2_Construction_IC Engine_OCS - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - IC Engine: Demolition: 10 days; Building Construction: 60 days

Off-road Equipment - Cranes (2): 4 hours per day; Welders (2): 8 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Cranes (2): 4 hours per day

Off-road Equipment -

Trips and VMT - Demolition: 8 Worker Trips, 0 Vendor Trips, 1 Hauling Trips
Building Construction: 15 Worker Trips, 4 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	60.00
tblConstructionPhase	NumDays	0.00	10.00
tblOffRoadEquipment	HorsePower	231.00	190.00
tblOffRoadEquipment	HorsePower	231.00	190.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	18.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.1381	8.0426	5.9871	0.0126	0.1933	0.3817	0.5532	0.0518	0.3671	0.3970	0.0000	1,156.0080	1,156.0080	0.2218	0.0000	1,161.5532
Maximum	**1.1381**	**8.0426**	**5.9871**	**0.0126**	**0.1933**	**0.3817**	**0.5532**	**0.0518**	**0.3671**	**0.3970**	**0.0000**	**1,156.0080**	**1,156.0080**	**0.2218**	**0.0000**	**1,161.5532**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.1381	8.0426	5.9871	0.0126	0.1933	0.3817	0.5532	0.0518	0.3671	0.3970	0.0000	1,156.0080	1,156.0080	0.2218	0.0000	1,161.5532
Maximum	**1.1381**	**8.0426**	**5.9871**	**0.0126**	**0.1933**	**0.3817**	**0.5532**	**0.0518**	**0.3671**	**0.3970**	**0.0000**	**1,156.0080**	**1,156.0080**	**0.2218**	**0.0000**	**1,161.5532**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/15/2020	5	10	
2	Building Construction	Building Construction	1/16/2020	4/8/2020	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	2	4.00	190	0.29
Building Construction	Cranes	2	4.00	190	0.29
Building Construction	Welders	2	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	8.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7911	7.7332	5.4265	0.0110		0.3810	0.3810		0.3663	0.3663		1,052.2752	1,052.2752	0.1862		1,056.9299
Total	**0.7911**	**7.7332**	**5.4265**	**0.0110**	**1.0000e-005**	**0.3810**	**0.3810**	**0.0000**	**0.3663**	**0.3663**		**1,052.2752**	**1,052.2752**	**0.1862**		**1,056.9299**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6000e-004	0.0272	5.4100e-003	8.0000e-005	1.7500e-003	9.0000e-005	1.8400e-003	4.8000e-004	8.0000e-005	5.6000e-004		8.3833	8.3833	5.6000e-004		8.3974
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.0370**	**0.0515**	**0.3325**	**1.0000e-003**	**0.0912**	**7.7000e-004**	**0.0919**	**0.0242**	**7.0000e-004**	**0.0249**		**99.9367**	**99.9367**	**3.1900e-003**		**100.0166**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7911	7.7332	5.4265	0.0110		0.3810	0.3810		0.3663	0.3663	0.0000	1,052.2752	1,052.2752	0.1862		1,056.9299
Total	**0.7911**	**7.7332**	**5.4265**	**0.0110**	**1.0000e-005**	**0.3810**	**0.3810**	**0.0000**	**0.3663**	**0.3663**	**0.0000**	**1,052.2752**	**1,052.2752**	**0.1862**		**1,056.9299**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6000e-004	0.0272	5.4100e-003	8.0000e-005	1.7500e-003	9.0000e-005	1.8400e-003	4.8000e-004	8.0000e-005	5.6000e-004		8.3833	8.3833	5.6000e-004		8.3974
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.0370**	**0.0515**	**0.3325**	**1.0000e-003**	**0.0912**	**7.7000e-004**	**0.0919**	**0.0242**	**7.0000e-004**	**0.0249**		**99.9367**	**99.9367**	**3.1900e-003**		**100.0166**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0571	7.5773	5.2739	9.8600e-003		0.3566	0.3566		0.3420	0.3420		874.5660	874.5660	0.2100		879.8155
Total	**1.0571**	**7.5773**	**5.2739**	**9.8600e-003**		**0.3566**	**0.3566**		**0.3420**	**0.3420**		**874.5660**	**874.5660**	**0.2100**		**879.8155**

3.3 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0131	0.4197	0.1000	1.0300e-003	0.0256	2.0800e-003	0.0277	7.3700e-003	1.9900e-003	9.3600e-003		109.7794	109.7794	6.8900e-003		109.9517
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**0.0810**	**0.4654**	**0.7132**	**2.7500e-003**	**0.1933**	**3.3500e-003**	**0.1966**	**0.0518**	**3.1600e-003**	**0.0550**		**281.4420**	**281.4420**	**0.0118**		**281.7377**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0571	7.5773	5.2739	9.8600e-003		0.3566	0.3566		0.3420	0.3420	0.0000	874.5660	874.5660	0.2100		879.8155
Total	**1.0571**	**7.5773**	**5.2739**	**9.8600e-003**		**0.3566**	**0.3566**		**0.3420**	**0.3420**	**0.0000**	**874.5660**	**874.5660**	**0.2100**		**879.8155**

3.3 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0131	0.4197	0.1000	1.0300e-003	0.0256	2.0800e-003	0.0277	7.3700e-003	1.9900e-003	9.3600e-003		109.7794	109.7794	6.8900e-003		109.9517
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**0.0810**	**0.4654**	**0.7132**	**2.7500e-003**	**0.1933**	**3.3500e-003**	**0.1966**	**0.0518**	**3.1600e-003**	**0.0550**		**281.4420**	**281.4420**	**0.0118**		**281.7377**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PAR1110.2_Construction_IC Engine_OCS

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - IC Engine: Demolition: 10 days; Building Construction: 60 days

Off-road Equipment - Cranes (2): 4 hours per day; Welders (2): 8 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Cranes (2): 4 hours per day

Off-road Equipment -

Trips and VMT - Demolition: 8 Worker Trips, 0 Vendor Trips, 1 Hauling Trips
Building Construction: 15 Worker Trips, 4 Vendor Trips, 0 Hauling

Demolition -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	60.00
tblConstructionPhase	NumDays	0.00	10.00
tblOffRoadEquipment	HorsePower	231.00	190.00
tblOffRoadEquipment	HorsePower	231.00	190.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	18.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.1449	8.0465	5.9375	0.0125	0.1933	0.3817	0.5533	0.0518	0.3671	0.3970	0.0000	1,146.1333	1,146.1333	0.2220	0.0000	1,150.8642
Maximum	**1.1449**	**8.0465**	**5.9375**	**0.0125**	**0.1933**	**0.3817**	**0.5533**	**0.0518**	**0.3671**	**0.3970**	**0.0000**	**1,146.1333**	**1,146.1333**	**0.2220**	**0.0000**	**1,150.8642**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.1449	8.0465	5.9375	0.0125	0.1933	0.3817	0.5533	0.0518	0.3671	0.3970	0.0000	1,146.1333	1,146.1333	0.2220	0.0000	1,150.8642
Maximum	**1.1449**	**8.0465**	**5.9375**	**0.0125**	**0.1933**	**0.3817**	**0.5533**	**0.0518**	**0.3671**	**0.3970**	**0.0000**	**1,146.1333**	**1,146.1333**	**0.2220**	**0.0000**	**1,150.8642**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/15/2020	5	10	
2	Building Construction	Building Construction	1/16/2020	4/8/2020	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	2	4.00	190	0.29
Building Construction	Cranes	2	4.00	190	0.29
Building Construction	Welders	2	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	8.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7911	7.7332	5.4265	0.0110		0.3810	0.3810		0.3663	0.3663		1,052.2752	1,052.2752	0.1862		1,056.9299
Total	**0.7911**	**7.7332**	**5.4265**	**0.0110**	**1.0000e-005**	**0.3810**	**0.3810**	**0.0000**	**0.3663**	**0.3663**		**1,052.2752**	**1,052.2752**	**0.1862**		**1,056.9299**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8000e-004	0.0276	5.8300e-003	8.0000e-005	1.7500e-003	9.0000e-005	1.8400e-003	4.8000e-004	9.0000e-005	5.6000e-004		8.2290	8.2290	5.9000e-004		8.2437
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.0403**	**0.0542**	**0.3003**	**9.4000e-004**	**0.0912**	**7.7000e-004**	**0.0919**	**0.0242**	**7.1000e-004**	**0.0249**		**93.8582**	**93.8582**	**3.0500e-003**		**93.9343**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7911	7.7332	5.4265	0.0110		0.3810	0.3810		0.3663	0.3663	0.0000	1,052.2752	1,052.2752	0.1862		1,056.9299
Total	**0.7911**	**7.7332**	**5.4265**	**0.0110**	**1.0000e-005**	**0.3810**	**0.3810**	**0.0000**	**0.3663**	**0.3663**	**0.0000**	**1,052.2752**	**1,052.2752**	**0.1862**		**1,056.9299**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8000e-004	0.0276	5.8300e-003	8.0000e-005	1.7500e-003	9.0000e-005	1.8400e-003	4.8000e-004	9.0000e-005	5.6000e-004		8.2290	8.2290	5.9000e-004		8.2437
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.0403**	**0.0542**	**0.3003**	**9.4000e-004**	**0.0912**	**7.7000e-004**	**0.0919**	**0.0242**	**7.1000e-004**	**0.0249**		**93.8582**	**93.8582**	**3.0500e-003**		**93.9343**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0571	7.5773	5.2739	9.8600e-003		0.3566	0.3566		0.3420	0.3420		874.5660	874.5660	0.2100		879.8155
Total	**1.0571**	**7.5773**	**5.2739**	**9.8600e-003**		**0.3566**	**0.3566**		**0.3420**	**0.3420**		**874.5660**	**874.5660**	**0.2100**		**879.8155**

3.3 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0138	0.4193	0.1114	1.0000e-003	0.0256	2.1100e-003	0.0277	7.3700e-003	2.0200e-003	9.3900e-003		106.6051	106.6051	7.4000e-003		106.7902
Worker	0.0740	0.0500	0.5521	1.6100e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		160.5547	160.5547	4.6000e-003		160.6699
Total	**0.0878**	**0.4693**	**0.6636**	**2.6100e-003**	**0.1933**	**3.3800e-003**	**0.1967**	**0.0518**	**3.1900e-003**	**0.0550**		**267.1599**	**267.1599**	**0.0120**		**267.4600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0571	7.5773	5.2739	9.8600e-003		0.3566	0.3566		0.3420	0.3420	0.0000	874.5660	874.5660	0.2100		879.8155
Total	**1.0571**	**7.5773**	**5.2739**	**9.8600e-003**		**0.3566**	**0.3566**		**0.3420**	**0.3420**	**0.0000**	**874.5660**	**874.5660**	**0.2100**		**879.8155**

3.3 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0138	0.4193	0.1114	1.0000e-003	0.0256	2.1100e-003	0.0277	7.3700e-003	2.0200e-003	9.3900e-003		106.6051	106.6051	7.4000e-003		106.7902
Worker	0.0740	0.0500	0.5521	1.6100e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		160.5547	160.5547	4.6000e-003		160.6699
Total	**0.0878**	**0.4693**	**0.6636**	**2.6100e-003**	**0.1933**	**3.3800e-003**	**0.1967**	**0.0518**	**3.1900e-003**	**0.0550**		**267.1599**	**267.1599**	**0.0120**		**267.4600**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

CEQA Impact Evaluations – Assumptions and Calculations

APPENDIX C-1

CEQA Impact Evaluations – Assumptions and Calculations

Construction Summary

Appendix C-1
CEQA Construction Impact Evaluations - Summary

Criteria Pollutant Emissions Summary

PAR 1110.2 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 Facilities Installing 1 SCR Systems	1.36	10.22	9.90	0.02	0.71	0.54
2 Facilities Repowering 1 I.C. Engines with 1 Stationary Gas Turbine	3.08	28.27	19.58	0.04	12.15	7.13
Peak Day - Worst Case Construction Emissions	4.44	38.49	29.48	0.06	12.86	7.67
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:

1. The emissions are estimated using CalEEMod.
2. Construction activities are expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	Amortized CO2e (MT/yr)	
Installing SCR Systems	825.21	0.13	0.00	828.41		
Repowering I.C. Engine with a Stationary Gas Turbine and NSCR Installation	1130.23	0.18	0.00	1134.80		
Replacing Engines and SCR installation	388.00	0.05	0.00	389.61		
Modifying Existing SCR or NSCR system	61.81	0.01	0.00	62.16		
Total Emissions During Construction	2405	0.37	0	2415	**80.5**	Total GHG Emissions Amortized over 30 Years

Notes:

1. The emissions are estimated using CalEEMod.

APPENDIX C-2

CEQA Impact Evaluations – Assumptions and Calculations

Operations Summary

Appendix C-2
CEQA Operational Impact Evaluations - Summary

Emissions Summary - Operations

PAR 1110.2 Requirement	VOC, lb/day	NOx, lb/day	CO, lb/day	SOx, lb/day	PM10, lb/day	PM2.5, lb/day
Increased Ammonia Deliveries for 2 Facilities	0.15	1.04	0.68	0.00	0.07	0.04
Increased Catalyst Delivery and Spent Catalyst Haul for 1 Facility in the OCS	1.34	6.16	11.21	0.09	0.33	0.18
Daily Peak Operational Emissions	**1.49**	**7.20**	**11.88**	**0.09**	**0.40**	**0.22**
SIGNIFICACNE THRESHOLD FOR OPERATION	55	55	550	150	150	55

Note
1. Replacing an engine is assumed to not create any new operational impacts.
2. Catalyst delivery to the OCS facility includes round trip of catalyst manufacturer to port and round trip of barge from the port to the platform.

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr
Total From Ammonia Delivery Truck	8.56	0.00	0.00	8.57
Total From Catalyst Delivery and Spent Catalyst Haul Trucks	5.17	0.00	-	5.18
Total From Barge Delivery Trips to Facility in the OCS	77.20	0.00	-	77.47
Total Annual Operational GHG Emissions	**90.94**	**0.00**	**0.00**	**91.21**

Note
1. Based on an increase of 96 ammonia delivery trips per year, 29 new catalyst deliveries per year , 29 haul trips for spent catalyst.
2. Up to 6 catalysts deliveries via barge per year for a total of 12 trips.

APPENDIX C-3

CEQA Impact Evaluations – Assumptions and Calculations

SCR or NSCR Modification

Appendix C-3
CEQA Construction Impact Evaluations

Emissions Summary - Modification of Existing SCR or NSCR System

PAR 1110.2 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Modification of Existing SCR or NSCR System	0.6	5.0	5.6	0.0	0.4	0.3
Daily Peak Construction Emissions	0.6	5.0	5.6	0.0	0.4	0.3
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. Equipment demolition and installation is expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
Modification of Existing SCR or NSCR System	4	0.0	0.0	3.9		
Total Emissions During Construction	4	0.0	0.0	**4**	0.130	Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

APPENDIX C-4

CEQA Impact Evaluations – Assumptions and Calculations

New SCR and Ammonia Tank Installation

Appendix C-4
CEQA Construction Impact Evaluations

Criteria Pollutant Emissions - Installation of 1 SCR System and Aqueous Ammonia Tank

PAR 1110.2 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 SCR and Ammonia Tank	**1.4**	**10.2**	**9.9**	**0.0**	**0.7**	**0.5**
Daily Peak Construction Emissions	1.4	10.2	9.9	0.0	0.7	0.5
SIGNIFICANCE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. SCR replacement is expected to occur on different days in multiple stages.

GHG Emissions Summary - 1 SCR and Aqueous Ammonia Tank

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
1 SCR and Aqueous Ammonia Tank	55.0	0.01	0.0	55.2		
Total Emissions During Construction	55.0	0.0	0.0	55.2	1.84	Amortized Over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

APPENDIX C-5

CEQA Impact Evaluations – Assumptions and Calculations

Engine Repower and SCR System and Ammonia Tank Installation

Appendix C-5
CEQA Construction Impact Evaluations

Emissions Summary - Repower IC Engine with New Stationary Gas Turbine and SCR

PAR 1110.2 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Repower IC Engine with New Stationary Gas Turbine and SCR	1.5	14.1	9.8	0.0	6.1	3.6
Daily Peak Construction Emissions	1.5	14.1	9.8	0.0	6.1	3.6
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. Equipment demolition and installation is expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
Replacement IC Engine and New 3-Way Catalyst	141	0.0	0.0	141.9		
Total Emissions During Construction	141	0.0	0.0	**142**	4.728	Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

APPENDIX C-6

CEQA Impact Evaluations – Assumptions and Calculations

Engine Replacement and NSCR System Installation in the OCS

Appendix C-6
CEQA Construction Impact Evaluations

Emissions Summary - Replacement IC Engine and New 3-Way Catalyst - OCS

PAR 1110.2 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Replacement IC Engine and New 3-Way Catalyst	1.14	8.05	5.99	0.01	0.55	0.40
Replacement IC Engine and New 3-Way Catalyst - Barge	0.66	5.13	11.14	0.05	0.18	0.18
Daily Peak Construction Emissions	1.81	13.17	17.13	0.06	0.73	0.57
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. Equipment demolition and installation is expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	
Replacement IC Engine and New 3-Way Catalyst	36	0.0	0.0	36.6	
Replacement IC Engine and New 3-Way Catalyst - Barge	28	0	0	28	
Total Emissions During Construction	65	0	0	65	2.165 Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Appendix C-6
CEQA Construction Impact Evaluations

Emissions Summary - Barge Emissions

by Engine Type	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Main Engine	0.6	4.8	7.1	0.04	0.17	0.17
Auxiliary Engines (2)	0.1	0.4	4.1	0.01	0.01	0.01
Daily Peak Operational Emissions	0.7	5.1	11	0.05	0.18	0.18
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	55	55	550	150	150	55

Hours/Day
4

Notes:

1. The main and auxiliary engine emissions for VOC, NOx, and PM10 are estimated using The Carl Moyer Program Guidelines 2017 Revisions: Appendix C: Cost-Effectiveness Calculation Methodology: Formula C-6 Estimated Annual Emissions Based on Hours of Operation (tons/yr)
2. The main and auxiliary engine emissions for CO and SOxare estimated using the SMAQMD Harbor craft, Dredge and Barge Emission Factor Calculator.
3. Peak daily trips assume one round trip between the Port of Los Angeles and OCS Facility, approximately a distance of 22 miles each way or two hours per trip.
4. Both engines use diesel fuel.
5. PM2.5 is conservatively assumed to be equal to PM10

GHG Emissions Summary: Barge Emissions

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	
Main Engine	1.93	0.00	0.00	1.94	
Auxiliary Engines (2)	0.42	0.00	0.00	0.42	
Total Emissions During Construction	2.36	0.00	0.00	2.36	0.07877598 Amortized over 30 Years

Notes:

1. The main and auxiliary engine emissions for CO2, CH4, N2O, and CO2e are estimated using the SMAQMD Harbor craft, Dredge and Barge Emission Factor Calculator
2. Equipment delivery is expected to take 1 trip.

APPENDIX C-7

CEQA Impact Evaluations – Assumptions and Calculations

Operational Calculations

Appendix C-7
CEQA Impact Evaluations - Assumptions and Calculations

Operational Emissions Summary - Increased Delivery of Aqueous Ammonia at 1 Facility and Increased Delivery/Haul of SCR Catalyst at 1 Facility on a Peak Day

PAR 1110.2	**CO, lb/day**	**NOx, lb/day**	**PM10, lb/day**	**PM2.5, lb/day**	**VOC, lb/day**	**SOX, lb/day**
Increased Delivery Trucks for Ammonia	0.34	0.52	0.03	0.02	0.08	0.002
Increased Truck Trips for New Catalyst Delivery and Spent Catalyst Haul Trip	0.68	1.04	0.07	0.04	0.15	0.004
Total	**1.01**	**1.56**	**0.10**	**0.06**	**0.23**	**0.01**

By Vehicle Class	**CO, lb/day**	**NOx, lb/day**	**PM10, lb/day**	**PM2.5, lb/day**	**VOC, lb/day**	**SOX, lb/day**	**CO2, MT/yr**	**CH4, MT/yr**	**N2O, MT/yr**	**CO2e, MT/yr**
Diesel Delivery Trucks (T6 Construction Truck)	0.34	0.52	0.03	0.02	0.08	0.00	8.56	0.00	0.00	8.57
Diesel Delivery Trucks (T6 Construction Truck)	0.68	1.04	0.07	0.04	0.15	0.00	5.17	0.00	0.00	5.18
Total	**1.01**	**1.56**	**0.10**	**0.06**	**0.23**	**0.01**	**13.73**	**0.00**	**0.00**	**13.74**

All sites	
Max. # used/day	**Max. # used/yr**
1	96
2	58

Note:
1. Peak daily trips assume one new ammonia delivery. Truck trip distances to deliver ammonia are assumed to be 100 miles round-trip
2. No additional employees are anticipated to be needed as a result to the increased ammonia usage. As such, no workers' travel emissions are anticipated from the operation of the replaced SCR catalyst.
3. It is assumed medium-heavy duty diesel instate construction trucks would be used to deliver ammonia and catalyst.

Delivery Trucks (Ammonia and Catalyst) - T6 instate construction heavy (T6) - each

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOX**	**CO2**	**CH4**	**N2O**	**CO2e**
lb/mile	0.0034	0.0052	0.0003	0.0002	0.0008	0.00002	1.97	0.00		1.97
lb/day, MT/day for GHG	0.34	0.52	0.03	0.02	0.08	0.002	0.09	0.00	0.00	0.09

VMT, mile/day
100.0

Emission Factors: from EMFAC2017, EPA AP-42 .

Appendix C-7
CEQA Impact Evaluations - Assumptions and Calculations

Emissions Summary - Barge Emissions

by Engine Type	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Main Engine	0.6	4.8	7.1	0.04	0.17	0.17
Auxiliary Engines (2)	0.1	0.4	4.1	0.01	0.01	0.01
Daily Peak Operational Emissions	0.7	5.1	11	0.05	0.18	0.18
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	55	55	550	150	150	55

Hours/Day
4

Notes:

1. The main and auxiliary engine emissions for VOC, NOx, and PM10 are estimated using The Carl Moyer Program Guidelines 2017 Revisions: Appendix C: Cost-Effectiveness Calculation Methodology: Formula C-6 Estimated Annual Emissions Based on Hours of Operation (tons/yr)
2. The main and auxiliary engine emissions for CO and SOxare estimated using the SMAQMD Harbor craft, Dredge and Barge Emission Factor Calculator.
3. Peak daily trips assume one round trip between the Port of Los Angeles and OCS Facility, approximately a distance of 22 miles each way or two hours per trip.
4. Both engines use diesel fuel.
5. PM2.5 is conservatively assumed to be equal to PM10

GHG Emissions Summary - Barge Emissions

PAR 1110.2 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr
Main Engine	11.60	0.00	0.00	11.64
Auxiliary Engines (2)	1.26	0.00	0.00	1.27
Total Emissions	12.87	0.00	0.00	12.91

Notes:

1. The main and auxiliary engine emissions for CO2, CH4, N2O, and CO2e are estimated using the SMAQMD Harbor craft, Dredge and Barge Emission Factor Calculator
2. Equipment delivery is expected to take 1 trip.
3. Assume up to 6 trips per year for catalyst replacement.

APPENDIX D

PAR 1110.2 List of Affected Facilities

Appendix D: PAR 1110.2 List of Affected Facilities

Facility ID	Facility Name	Facility Address	On List per Government Code Section 65962.5 (Envirostor)?	Distance from School (meters)	Distance from Sensitive Receptor (meters)	Located within Two Miles of an Airport?
4242	San Diego Gas & Electric	14601 Virginia St, Moreno Valley, 92555	No	4492	26	No
5973	So Cal Gas Co.	25205 Rye Canyon, Valencia, 91355	No	882	724	No
8547	Quemetco Inc.	720 7th Ave, City of Industry, 91746	Yes	904	306	No
8582	So Cal Gas Co/Playa del Rey Storage Fac	8141 Gulana Ave, Playa Del Rey, 90293	No	726	0	Yes
9755	United Airlines Inc.	6010 Avion Dr, Los Angeles, 90045	Yes	1376	776	Yes
18931	Tamco	12459 Arrow Rte, Rancho Cucamonga, 91739	No	1035	853	No
43201	Snow Summit Inc.	880 Summit Blvd, Big Bear Lake, 92315	No	1614	35	No
61962	LA City, Harbor Dept	500 Pier A St, Wilmington, 90744	No	426	0	No
62548	The Newark Group, Inc.	6001 S Eastern Ave, Commerce, 90040	No	1053	369	No
68118	Tidelands Oil Production Company Etal	230 S Pico Ave, Long Beach, 90802	No	1115	533	No
124723	Greka Oil & Gas	1920 E Orchard Dr, Placentia, 92870	No	848	0	No
143740	DCOR LLC	Offshore Platform Esther, Seal Beach, 90740	No	1651	0	No
143741	DCOR LLC	Offshore Platform Edith, Huntington Beach, 92649	No	916	0	No
150201	Breitburn Operating LP	10735 S Shoemaker Ave, Santa Fe Springs, 90670	No	866	621	No
155877	Millercoors, LLC	15801 E 1st St, Irwindale, 91706	No	1988	1469	No
166073	Beta Offshore	OCS Lease Parcels P300/P301, Huntington Beach, 92648	No	1106	3	No
169754	So Cal Holding, LLC	20101 Goldenwest St, Huntington Beach, 92468	No	771	6	No
173904	Lapeyre Industrial Sands, Inc.	31302 Ortega Hwy, San Juan Capistrano, 92675	No	3325	0	No
174544	Breitburn Operating LP	11100 Constitution Ave, Los Angeles, 90025	No	1447	301	No
800128	So Cal Gas Co	12801 Tampa Ave, Northridge, 91326	No	454	10	No
800189	Disneyland Resort	1313 S Harbor Blvd, Anaheim, 92802	No	674	383	No

Note: Distances between facilities and sensitive receptors were estimated using ArcGIS from facility center point to receptor parcel boundary. Distances between facilities and schools or airports were estimated using ArcGIS from facility center point to school or airport center point.

APPENDIX E

Hazards Analysis

Appendix E: Hazards Analysis for PAR 1110.2 - Ammonia/Urea Usage

Estimated Ammonia/Urea Usage Increase

Facility	Increased Ammonia/Urea Needed per Year (gal/year)	Increased Ammonia/Urea Solution Needed per Year (lbs/year)	Increased Ammonia/Urea Solution Needed per day (lbs/day)	Increased Ammonia/Urea Solution Needed per day (tons/day)
A	10,333	80062	219	0.11
B	89	693	2	9.49E-04
C	2,045	15847	43	0.02
D	38	292	1	4.00E-04
E	7,147	55378	152	0.08
F	24,044	186297	510	0.26
G	6,850	63412	174	0.09
H	940	8700	24	0.01
			Total Usage	**0.56**

1. All facilities except Facilities G and H will be using 19% aqueous ammonia. Facilities G and H will be using aqueous urea which is assumed to be 40% urea by weight.
2. Facility H currently has an 10 ppmv ammonia slip limit for the existing SCR systems. If Facility H modifies the exisitng SCR system, they will be subject to a 5 ppmv ammonia slip limit.

Hazards Assessment for PAR 1110.2 - New Ammonia/Urea Tanks

Facility	Total Ammonia Needed per Month, gals/month	Tank Size Needed	Typical Tank Size	Deliveries per Month	Maximum Quantity Released, gallons	RMP Value (in miles)	Distance (feet)	Distance of closest receptor (feet)	Significant?
A	861	1292	1,500	1	1005	0.5	2640	84	Yes
B	7	11	250	1	167.5	0.1	528	0	Yes
C	170	256	500	1	335	0.1	528	4821	No
D	3	5	250	1	167.5	0.1	528	21	Yes
E	596	893	1,000	1	670	0.2	1056	32	Yes
F	2004	3006	5,000	1	3350	0.3	1584	2376	No
G	571	856	1,000	1	670	0.2	1056	0	Yes

1. Storage tanks should be sized to hold at least 1.5 times (https://www.tannerind.com/sto-aqua-ammonia.html)
2. Tank Size Dimensions: https://ammoniatanks.com/
3. RMP*Comp run at 77 degrees F.
4. Maximum size of ammonia tank is typically 10,000 gallons.
5. Maximum quantity release is assumed to be equal to 67% the capacity of the tank (see Note 1).
6. Facility A is located in a rural area with terrain that is generally flat and unobstructed.
7. Due to the low use of ammonia or urea needed, Facility B and D will not likely install a storage tank but a tank of 250 gallons will be included in the analysis as the worst case. Totes of ammonia/urea may be delivered as needed.
8. Facility G will be using urea; however, it is assumed that ammonia in the solution (about 30% by weight) will be released.

Facility A - Ammonia Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Ammonia needed (19% solution), gal/month
A1	995	NG	150	11	7.78	0.57	7.21	0.16	0.16	0.41	0.02	66
A2	995	NG	150	11	6.91	0.51	6.40	0.14	0.15	0.41	0.02	59
A3	995	NG	150	11	7.17	0.53	6.65	0.14	0.15	0.41	0.02	61
A4	3000	NG	101	11	7.68	0.83	6.85	0.15	0.16	1.25	0.07	80
A5	3000	NG	85	11	9.65	1.24	8.41	0.18	0.19	1.25	0.07	92
A6	3200	NG	194	11	63.51	3.59	59.92	1.30	1.37	1.33	0.08	503

Total gallons of ammonia required per month = 861

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. Aqueous ammonia is 19% ammonia by weight.

Facility B - Ammonia Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Ammonia needed (19% solution), gal/month
B1	450	Diesel	344	11	0.44	0.01	0.43	0.01	0.01	0.20	0.01	7
											Total gallons of ammonia required per month =	**7**

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. Aqueous ammonia is 19% ammonia by weight.

Facility C - Ammonia Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Ammonia needed (19% solution), gal/month
C1	881	Digester Gas	36	11	13.22	4.04	9.18	0.20	0.21	0.37	0.02	80
C2	881	Digester Gas	36	11	1.50E+01	4.58E+00	1.04E+01	0.23	0.24	0.37	0.02	90
											Total gallons of ammonia required per month =	**170**

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. Aqueous ammonia is 19% ammonia by weight.

Facility D - Ammonia Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Ammonia needed (19% solution), gal/month
D1	131	Diesel	208	11	0.26	0.01	0.25	0.01	0.01	0.06	3.38E-03	3
										Total gallons of ammonia required per month =		**3**

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. Aqueous ammonia is 19% ammonia by weight.

Facility E- Ammonia Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Ammonia needed (19% solution), gal/month
E1	2000	NG	37	11	18.63	5.60	13.04	0.28	0.30	0.83	0.05	120
E2	2000	NG	21	11	11.34	5.90	5.44	0.12	0.12	0.83	0.05	60
E3	2000	NG	40	11	24.86	6.82	18.04	0.39	0.41	0.83	0.05	160
E4	2000	NG	53	11	20.85	4.35	16.51	0.36	0.38	0.83	0.05	148
E5	2000	NG	31	11	17.58	6.28	11.30	0.25	0.26	0.83	0.05	107
											Total gallons of ammonia required per month =	**596**

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. Aqueous ammonia is 19% ammonia by weight.

Facility F - Ammonia Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Ammonia needed (19% solution), gal/month
F1	5500	NG	90	11	65.27	8.00	57.28	1.25	1.31	2.29	0.13	501
F2	5500	NG	71	11	27.79	4.29	23.50	0.51	0.54	2.29	0.13	233
F3	5500	NG	93	11	56.50	6.68	49.81	1.08	1.14	2.29	0.13	442
F4	5500	NG	91	11	56.39	6.79	49.60	1.08	1.13	2.29	0.13	440
F5	5500	NG	78	11	49.82	7.03	42.79	0.93	0.98	2.29	0.13	386
									Total gallons of ammonia required per month =			**2004**

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. Aqueous ammonia is 19% ammonia by weight.

Facility G- Urea Usage

Engine	Engine size, hp	Fuel	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	Emissions Reduction, lbs/day	Moles reduction per day	Moles ammonia needed per day	Ammonia slip, lbs/day	Ammonia slip, mols/day	Urea needed (28.1% ammonia by wt solution), gal/month
G1	2000	NG	225	11	51.22	2.50	48.71	1.06	1.11	0.83	0.05	225
G2	2000	NG	225	11	24.84	1.21	23.63	0.51	0.54	0.83	0.05	114
G3	2000	NG	225	11	52.72	2.58	50.14	1.09	1.14	0.83	0.05	232
											Total gallons of urea required per month =	**571**

Notes:

1. Proposed ammonia slip is 5 ppm @ 15% O2
2. lbs/hr NH3 = Ammonia Slip (ppm) x Molecular Weight of Ammonia x Dry Fuel Factor /(Molar Volume at 68F x 1000000) x (%O2 in air/(%O2 in air - %O2 in stack))
   where,
   Ammonia Slip = 5 ppm
   Molecular Weight of Ammonia = 17 lbs/lb-mol
   Dry Fuel Factor = 8710 dscf/MMBTU for Natural Gas, Propane, and Butane, 9190 dscf/MMBTU for Diesel and Fuel Oil
   Molar Volume @ 68F = 385 cf/lb-mol
   1000000 = ppm conversion factor
   % O2 in air = 20.9%
   % O2 correction = 3% or 15 %
3. 40% aqueous urea contains about 28.4% ammonia by weight.

APPENDIX F

Estimated NOx Emission Reductions per Engine

Appendix F: NOx EMISSION REDUCTIONS AFTER IMPLEMENTING PAR 1110.2

Facility	Unit	Engine size, hp	Existing NOx Control Techology	Expected Modification	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	NOx reduction, lbs/day
A	A1	995	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	150	11	7.78	0.57	7.21
A	A2	995	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	150	11	6.91	0.51	6.40
A	A3	995	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	150	11	7.17	0.53	6.65
A	A4	3000	Oxidation Cat	SCR and Oxi-cat	101	11	7.68	0.83	6.85
A	A5	3000	Oxidation Cat	SCR and Oxi-cat	85	11	9.65	1.24	8.41
A	A6	3200	Oxidation Cat	SCR and Oxi-cat	194	11	63.51	3.59	59.92
B	B1	5500	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	90	11	65.27	8.00	57.28
B	B2	5500	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	71	11	27.79	4.29	23.50
B	B3	5500	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	93	11	56.50	6.68	49.81
B	B4	5500	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	91	11	56.39	6.79	49.60
B	B5	5500	Oxidation Cat	Repower with stationary gas turbine equipped with SCR system	78	11	49.82	7.03	42.79
B	B6	818	3-way Cat	new AFRC/re-tuning	20	11	3.42	1.88	1.54
B	B7	818	3-way Cat	new AFRC/re-tuning	20	11	4.96	2.73	2.23
B	B8	738	3-way Cat	new AFRC/re-tuning	20	11	1.74	0.97	0.77
B	B9	738	3-way Cat	new AFRC/re-tuning	20	11	1.27	0.71	0.56
B	B10	818	3-way Cat	Retrofit with new AFRC	20	11	2.46	1.35	1.11
C	C1	2000	Oxidation Cat	SCR and Oxi-cat	225	11	51.22	2.50	48.71
C	C2	2000	Oxidation Cat	SCR and Oxi-cat	225	11	24.84	1.21	23.63
C	C3	2000	Oxidation Cat	SCR and Oxi-cat	225	11	52.72	2.58	50.14
D	D1	3043	Oxidation Cat w/ SCR and DPF	SCR Retrofits	50	11	3.63	0.80	2.83
D	D2	3043	Oxidation Cat w/ SCR and DPF	SCR Retrofits	50	11	4.22	0.93	3.29
D	D3	3043	Oxidation Cat w/ SCR and DPF	SCR Retrofits	50	11	1.99	0.44	1.55

Facility	Unit	Engine size, hp	Existing NOx Control Techology	Expected Modification	Current NOx Limit, ppm	Proposed NOx Limit, ppm	Current Emissions, lbs/day	Emissions after Modification, lbs/day	NOx reduction, lbs/day
D	D4	3043	Oxidation Cat w/ SCR and DPF	SCR Retrofits	50	11	4.79	1.05	3.74
D	D5	3043	Oxidation Cat w/ SCR and DPF	SCR Retrofits	50	11	3.83	0.84	2.99
D	D6	3043	Oxidation Cat w/ SCR and DPF	SCR Retrofits	50	11	4.21	0.93	3.29
E	E1	450	FGR	SCR and Oxi-cat	344	11	0.44	0.01	0.43
F	F1	881	Oxidation Cat	SCR and Oxi-cat	36	11	13.22	4.04	9.18
F	F2	881	Oxidation Cat	SCR and Oxi-cat	36	11	14.99	4.58	10.41
G	G1	853	Oxidation Cat	Replace with new engine with 3-way catalyst	450	11	8.21	0.20	8.01
G	G2	853	Oxidation Cat	Replace with new engine with 3-way catalyst	450	11	9.36	0.23	9.13
G	G3	853	Oxidation Cat	Replace with new engine with 3-way catalyst	450	11	3.70	0.09	3.61
G	G4	853	Oxidation Cat	Replace with new engine with 3-way catalyst	450	11	3.84	0.09	3.75
G	G5	853	Oxidation Cat	Replace with new engine with 3-way catalyst	450	11	2.25	0.05	2.19
G	G6	853	Oxidation Cat	Replace with new engine with 3-way catalyst	450	11	0.18	0.0045	0.18
H	H1	131	None	SCR	208	11	0.26	0.01	0.25
I	I1	845	3-way Cat	New 3-way Catalyst	28	11	8.20	3.18	5.02
J	J1	2000	Oxidation Cat	SCR and Oxi-cat	37	11	18.63	5.60	13.04
J	J2	2000	Oxidation Cat	SCR and Oxi-cat	21	11	11.34	5.90	5.44
J	J3	2000	Oxidation Cat	SCR and Oxi-cat	40	11	24.86	6.82	18.04
J	J4	2000	Oxidation Cat	SCR and Oxi-cat	53	11	20.85	4.35	16.51
J	J5	2000	Oxidation Cat	SCR and Oxi-cat	31	11	17.58	6.28	11.30
J	J6	818	3-way Cat	new AFRC/re-tuning	20	11	4.76	2.62	2.14
J	J7	818	3-way Cat	new AFRC/re-tuning	20	11	4.33	2.38	1.95
J	J8	818	3-way Cat	new AFRC/re-tuning	20	11	3.47	1.91	1.56
J	J9	818	3-way Cat	new AFRC/re-tuning	20	11	3.46	1.90	1.56
							Total NOx Reductions, lbs/day		**588.5**