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 1134 – EMISSIONS OF OXIDES OF NITROGEN FROM STATIONARY GAS TURBINES**

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

This letter, the attached NOC, and the attached Draft SEA are not SCAQMD applications or forms requiring a response from you. Their purpose is simply to provide information to you on the above project. If the proposed project has no bearing on you or your organization, no action on your part is necessary. The Draft SEA and other relevant documents may be obtained by calling the SCAQMD Public Information Center at (909) 396-2039 or accessing the SCAQMD's CEQA website at: http://www.aqmd.gov/home/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 45-day public review and comment period beginning Tuesday, January 29, 2019 and ending at 5:00 p.m. on Friday, March 15, 2019. **Please send any comments relative to the CEQA analysis in the Draft SEA to Mr. Ryan Bañuelos (c/o CEQA) at the address shown above.** Comments can also be sent via facsimile to (909) 396-3982 or email to rbanuelos@aqmd.gov. Please include the name and phone number of the contact person for your organization, if any. Questions regarding the proposed amended rule language should be directed to Mr. Michael Morris at (909) 396-3282 or by email to mmorris@aqmd.gov.

The Public Hearing for the proposed amended rule is scheduled for April 5, 2019. (Note: Public meeting dates are subject to change.)

Date: January 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 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

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

Description of Nature, Purpose, and Beneficiaries of Project: Proposed Amended Rule (PAR) 1134 applies to stationary gas turbines that are not subject to SCAQMD Rule 1135 – Emissions of Oxides of Nitrogen (NOx) from Electricity Generating Facilities, or located at petroleum refineries. PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 - MRR Requirements for NOx and SOx Sources, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 6) revise existing exemptions to remove obsolete provisions. The proposed project is estimated to reduce NOx emissions by 2.8 tons per day after implementation of BARCT limits. The Draft SEA indicates that while reducing NOx emissions is an environmental benefit, secondary significant adverse environmental impacts are also expected for the topic area of hazards and hazardous materials. Some sites affected by PAR 1134 may be identified on lists compiled by the California Department of Toxic Substances Control per Government Code Section 65962.5.

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

Draft SEA and all supporting documentation are available at:	**or by calling:**	**Draft SEA can also be obtained by accessing SCAQMD's website at:**
SCAQMD 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 (January 29, 2019)
☑ SCAQMD Mailing List & Interested Parties
☑ SCAQMD Public Information Center
☑ SCAQMD Website

Draft SEA Review Period (45 days):
January 29, 2019 – March 15, 2019

Scheduled Public Meeting Date(s) (subject to change):
SCAQMD Governing Board Hearing: April 5, 2019, 9:00 a.m.; SCAQMD Headquarters

The proposed project may have statewide, regional, or areawide significance; therefore, a CEQA scoping meeting was required (pursuant to Public Resources Code Section 21083.9 (a)(2)) and held at the SCAQMD's Headquarters in conjunction with the Public Workshop on December 18, 2018.

Send CEQA Comments to:	**Phone:**	**Email:**	**Fax:**
Mr. Ryan Bañuelos	(909) 396-3479	rbanuelos@aqmd.gov	(909) 396-3982
Direct Questions on PAR 1134 to:	**Phone:**	**Email:**	**Fax:**
Mr. Michael Morris	(909) 396-3282	mmorris@aqmd.gov	(909) 396-3324

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

January 2019

SCAQMD No. 01292019RB
State Clearinghouse No. 2016071006

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CHAPTER 1

EXECUTIVE SUMMARY

INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) 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 SCAQMD to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO2), and NO2 by the earliest practicable date. (Health and Safety Code Section 40910.) The CCAA also requires a three-year plan review, and, if necessary, an update to the SIP. The 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 SCAQMD 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 SCAQMD[3]. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP[4]. The AQMP is a regional blueprint for how the SCAQMD 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 SCAQMD Governing Board adopted Regulation XX – Regional Clean Air Incentives Market (RECLAIM) to reduce NOx and oxides of sulfur (SOx) emissions from high

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

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 emissions 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 less 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 SCAQMD 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, SCAQMD 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 SCAQMD Regulation XI – Source Specific Standards. Thus, SCAQMD 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 SCAQMD 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, SCAQMD staff determined that RECLAIM facilities should not exit unless their NOx emitting equipment is subject to an adopted future BARCT rule.

As such, SCAQMD staff has proposed amendments to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, 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. PAR 1134 applies to RECLAIM and non-RECLAIM stationary gas turbines that are not subject to SCAQMD Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities or located at petroleum refineries, landfills, or publicly owned treatment works. PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 - MRR Requirements for NOx and SOx Sources, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 6) revise existing exemptions to remove obsolete provisions. Implementation of the proposed project is estimated to reduce NOx emissions by 2.8 tons per day after implementation of the BARCT limits, which is expected to be achieved by retrofitting existing stationary gas turbines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/systems installation), or repowering or replacing existing stationary gas.

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 SCAQMD Governing Board, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing the proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

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

PAR 1134 is considered a “project” as defined by CEQA. PAR 1134 will transition affected stationary gas turbines at NOx RECLAIM facilities to a command-and-control regulatory structure. NOx RECLAIM facilities with equipment subject to PAR 1134 will be required to meet the NOx emission limits as specified in PAR 1134, unless those facilities qualify for an exemption. In addition, a subset of stationary gas turbines at non-RECLAIM facilities will be required to meet new NOx emission limits in accordance with the compliance schedule in PAR 1134. The decision to transition from NOx RECLAIM into a source-specific command-and-control regulatory structure was approved by the SCAQMD 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].

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,

[6] SCAQMD, 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

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 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-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 for that project.

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 1134[7]. PAR 1134 revises NOx emission limits to reflect current BARCT for stationary gas turbines. In particular, PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 - MRR Requirements for NOx and SOx Sources, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx; and 6) revise existing exemptions to remove obsolete provisions. The proposed project is estimated to reduce NOx emissions by 2.8 tons 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 1134 may also create secondary adverse environmental impacts in the topic area of hazards and hazardous materials.

SCAQMD staff has determined that PAR 1134 contains new information of substantial importance which was not known and could not have been known at the time the Final Program EIR was

[7] SCAQMD's rule development webpage for PAR 1134 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#1134.

certified for the March 2017 adoption of the 2016 AQMP (referred to herein as the March 2017 Final Program EIR).

However, PAR1134 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 for the 2016 AQMP (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. The SEA is a substitute CEQA document prepared in lieu of a Subsequent Environmental Impact Report with significant impacts (CEQA Guidelines Section 152162(b)), pursuant to the SCAQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(1); codified in SCAQMD Rule 110). The SEA is also a public disclosure document intended to: 1) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental impacts of the proposed project; and 2) be used as a tool by decision makers to facilitate decision making on the proposed project.

Because new potentially significant adverse effects to hazards and hazardous materials that may result from implementing PAR 1134 were not analyzed at the project level in the March 2017 Final Program EIR for the 2016 AQMP, and because PAR 1134 contains new information that was not previously considered, the SCAQMD, as lead agency for the proposed project has prepared this SEA with significant impacts pursuant to its Certified Regulatory Program. Because PAR 1134 may have statewide, regional, or areawide significance, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) and was held at the SCAQMD's Headquarters in conjunction with the Public Workshop on December 18, 2018. There were no CEQA-related comments made at the Public Workshop/CEQA scoping meeting relative to PAR 1134. 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 45-day public review and comment period from Tuesday, January 29, 2019 to Friday, March 15, 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 SCAQMD's website at: http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/scaqmd-projects---year-2017. This document may also be obtained by visiting the Public Information Center at SCAQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765; or by contacting Fabian Wesson, Public Advisor by phone at (909) 396-2039 or by email at PICrequests@aqmd.gov.

Prior to making a decision on the adoption of PAR 1134, the SCAQMD Governing Board must review and certify the Final SEA, including responses to comments, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PAR 1134.

PREVIOUS CEQA DOCUMENTATION

The Draft SEA is a comprehensive environmental document that analyzes potential environmental impacts from PAR 1134. SCAQMD rules, as ongoing regulatory programs, have the potential to be revised over time due to a variety of factors (e.g., regulatory decisions by other agencies, new data, and lack of progress in advancing the effectiveness of control technologies to comply with requirements in technology forcing rules, etc.). Rule 1134 was adopted in August 1989 and amended in December 1995, April 1997, and August 1997. Several previous CEQA documents have been prepared that analyzed the past amendments to Rule 1134. Also, the 2016 AQMP was adopted in March 2017 and an environmental analysis for the entire 2016 AQMP, including control measure CMB-05, was addressed in the March 2017 Final Program EIR.

The following summarizes the contents of the CEQA documents prepared for the previous versions of Rule 1134 and for the 2016 AQMP 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 SCAQMD'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 SCAQMD's Public Records Unit.

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 ppb) for ozone by 2024; the 2008 8-hour ozone standard (75 ppb) by 2032; the 2012 annual PM2.5 standard (12 µg/m3) by 2025; the 2006 24-hour PM2.5 standard (35 µg/m3) by 2019; and the revoked 1979 1-hour ozone standard (120 ppb) by 2023. The 2016 AQMP consists of three components: 1) the SCAQMD'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 prepared and adopted. The SCAQMD 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.

Notice of Exemption from CEQA for Proposed Amended Rule 1134 – Emission of Oxides of Nitrogen From Stationary Gas Turbines; August 1997: The August 1997 amendments to Rule 1134 clarified that a Continuous Emissions Monitoring System (CEMS) is only required for combined cycle units with a power output of 2.9 megawatts or larger. The August 1997 amendments established consistency between Rule 1134, SCAQMD practice in 1997, and the Rule 1134 Administrative Record. Also included in the August 1997 amendments were recordkeeping amendments to correct SIP deficiencies. The project was reviewed pursuant to CEQA Guidelines Section 15002(k)(1) and SCAQMD staff concluded that it could be seen with certainty that there was no possibility that the project had the potential to create any significant adverse impacts on the environment. Therefore, the SCAQMD determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Review for Exemption. The project was approved on August 8, 1997 and a Notice of Exemption was filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties.

Final Supplemental Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen From Stationary Gas Turbines; April 1997 (SCAQMD No. 970124TT): The April 1997 amendments to Rule 1134 addressed state implementation plan (SIP) deficiencies identified by the United States Environmental Protection Agency (U.S. EPA); that included minor language clarifications and raised the NOx concentration limit for facilities that use digester gas fuel in selective catalytic reduction controlled gas turbine units. The April 1997 amendments increased the NOx emission limit from nine parts per million to 25 parts per million. The April 1997 amendments resulted in a loss of anticipated of emission reductions of NOx of approximately 127 pounds per day. The SCAQMD prepared a Draft Supplemental Environmental Assessment for the April 1997 amendments to Rule 1134, which identified significant adverse environmental impacts for air quality. The Draft Supplemental Environmental Assessment for Rule 1134 was a supplement to the December 1995 Final Supplemental Environmental Assessment (SCAQMD No. 951207TM) prepared for Rule 1134 and was circulated for a 45-day public review and comment period. The Final Supplemental Environmental Assessment was certified by the SCAQMD Governing Board on April 11, 1997. Findings were made and a Statement of Overriding Considerations was also adopted for this project. A Mitigation, Monitoring, and Reporting Plan was not prepared since no feasible mitigation measures or alternatives were identified in the April 1997 Final Supplemental Environmental Assessment for Rule 1134.

Final Supplemental Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen From Stationary Gas Turbines; December 1995 (SCAQMD No. 951207TM): The December 1995 amendments to Rule 1134 exempted some existing stationary gas turbines from the NOx limits contained in the rule. The exempted stationary gas turbines included those operated in the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB) formally known as the Southeast Desert Air Basin (SEDAB) and on San Clemente Island. In addition, the December 1995 amendments eliminated the requirement to account for variations in ambient temperature, pressure, and humidity by continuously correcting the reference

NOx emission limits to the International Standards Organization (ISO) standard. The SCAQMD prepared a Draft Supplemental Environmental Assessment for the December 1995 amendments to Rule 1134, which identified significant adverse environmental impacts for air quality. The Draft Supplemental Environmental Assessment for Rule 1134 was a supplement to the August 1989 Final EIR (SCH No. 86121708) prepared for Rule 1134 and was circulated for a 45-day public review and comment period. Findings were made and a Statement of Overriding Considerations was adopted for the project. A Mitigation, Monitoring, and Reporting Plan was not prepared since no feasible mitigation measures or alternatives were identified in the December 1995 Final Supplemental Environmental Assessment for Rule 1134. The Final Supplemental Environmental Assessment was certified by the SCAQMD Governing Board on December 7, 1995.

Final Environmental Impact Report for Proposed Rule 1134 – Emissions of Oxides of Nitrogen From Stationary Gas Turbines; August 1989 (SCH No. 86121708): The SCAQMD prepared a series of CEQA documents for the August 1989 adoption of Rule 1134 as follows: 1) a Draft EIR 1134 was circulated for a 45-day public review and comment period on October 17, 1987; 2) Draft Final EIR was circulated for a 45-day public review and comment period on March 21, 1988; 3)a Revised Draft EIR was circulated for a 45-day public review and comment period on September 6, 1988; and 4) a Supplement to the Revised Draft EIR was circulated for a 45-day public review and comment period on May 14, 1989. Findings were made and a Statement of Overriding Considerations was adopted for the project. A Mitigation, Monitoring, and Reporting Plan was prepared and included as Attachment 1 to the Board Resolution for the Final EIR for Rule 1134. Each of the aforementioned documents were incorporated by reference into the Final EIR which was certified by the SCAQMD Governing Board on August 4, 1989.

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 SCAQMD Governing Board and the public with information on the environmental effects of the proposed project; and b) be used as a tool by the SCAQMD Governing Board to facilitate decision-making on the proposed project.

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

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

In addition to the SCAQMD's Governing Board which will consider the SEA for PAR 1134 in their decision-making, the California Air Resources Board (CARB), a state agency, and the U.S. EPA, a federal agency, will be reviewing PAR 1134 and all supporting documents, including the SEA, as part of the process for considering the inclusion of PAR 1134 into the SIP. Moreover, PAR 1134 is not subject to any other related environmental review or consultation requirements.

To the extent that local public agencies, such as cities, county planning commissions, et cetera, are responsible for making land use and planning decisions related to projects that must comply with the requirements in PAR 1134, 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 1134 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, no concerns regarding PAR 1134 were expressed by representatives of industry and environmental groups, either in public meetings or in written comments.

Pursuant to CEQA Guidelines Section 15131(a), "[e]conomic or social effects of a project shall not be treated as significant effects on the environment." CEQA Guidelines Section 15131(b) states further, "[e]conomic or social effects of a project may be used to determine the significance of physical changes caused by the project." Physical changes that may be caused by PAR 1134 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 PAR 1134.

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 SCAQMD to amend and adopt air pollution control rules, identifies general CEQA requirements and the intended uses of this CEQA document, and summarizes the remaining four chapters that comprise this SEA.

Summary of Chapter 2 – Project Description

SCAQMD 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 SCAQMD Regulation XX – RECLAIM for NOx to instead be subject to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI. To date, several rules have been amended in accordance with the Governing Board's direction. Currently, SCAQMD staff is continuing this transition process by proposing amendments to Rule 1134. PAR 1134 reflects the proposed project which is a culmination of recommendations made throughout the public engagement process including four working group meetings held at SCAQMD headquarters in

Diamond Bar on February 22, 2018, April 26, 2018, June 13, 2018, and August 10, 2018. 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 PAR 1134 at the RECLAIM working group meetings held on November 8, 2017, January 11, 2018, February 8, 2018, March 8, 2018, April 12, 2018, June 14, 2018, July 12, 2018, November 8, 2018, and December 13, 2018. A Public Workshop and CEQA Scoping Meeting was held December 18, 2018. PAR 1134 will transition affected stationary gas turbines at NOx RECLAIM facilities to a command-and-control regulatory structure. PAR 1134 revises NOx emission limits to reflect current BARCT for stationary gas turbines. In particular, PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with BARCT; 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 6) revise existing exemptions to remove obsolete provisions. Other minor changes are also proposed for clarity and consistency throughout the rule. The proposed project is estimated to reduce NOx emissions by 2.8 tons 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 1134 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.

A copy of PAR 1134 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. While the analysis of the proposed project indicated that additional potentially significant adverse hazards and hazardous material impacts will occur, the focus of the analysis in this SEA is limited to the environmental topic of and 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 1134, this chapter also includes 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 SCAQMD's jurisdiction has shown substantial improvement over the last two decades. Nevertheless, some federal and state air quality standards are still exceeded frequently and by a wide margin. Of the NAAQS established for seven criteria pollutants (ozone, lead, sulfur dioxide, nitrogen dioxide, carbon monoxide, PM10 and PM2.5), the area within the SCAQMD's jurisdiction is only in attainment with the NAAQS for carbon monoxide, sulfur dioxide, and nitrogen dioxide. Chapter 3 provides a brief description of the existing air quality setting for each criteria pollutant, as well as the human health effects resulting from exposure to each criteria pollutant.

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 1134, this chapter also analyzes the topic of air quality.

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, PAR 1134. Please see Chapter 4, Table 4-16, 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.

PAR 1134 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 PAR 1134, 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 topics air quality during construction and 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 1-2: 1) Alternative A – No Project; 2) Alternative B – Earlier Compliance Date; and 3) Alternative C – Phased 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 1-3. 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 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 meeting the overall objectives of the project. Therefore, the proposed project is preferred over the project alternatives.

Table 1-1
Summary of the Proposed Project Alternatives

PROPOSED PROJECT Compliance Date 12/31/2023[1]			ALTERNATIVE A No Project[4, 5]		ALTERNATIVE B Earlier Compliance Date 12/31/2022		ALTERNATIVE C Phased Compliance Dates[6]
Fuel Type	**NOx Limit (ppmv)**	**Ammonia Limit (ppmv)**	**NOx Limit (ppmv)**	**Ammonia Limit (ppmv)**	**NOx Limit (ppmv)**	**Ammonia Limit (ppmv)**	**Phased compliance dates with equivalent NOx & Ammonia limits to the Proposed Project**
Liquid Fuel – Outer Continental Shelf[2]	30	5	--	--	30	5	Compliance Date: December 31, 2023
Natural Gas – Combined Cycle	2	5	--	--	2	5	Compliance Date: June 30, 2023
Natural Gas – Pipeline Gas Turbine	8	5	--	--	8	5	Compliance Date: December 31, 2023
Natural Gas – Simple Cycle	2.5	5	--	--	2.5	5	Compliance Date: December 31, 2022
Produced Gas	5	5	--	--	5	5	Compliance Date: December 31, 2023
Produced Gas – Outer Continental Shelf[3]	15	5	--	--	15	5	Compliance Date: December 31, 2023
Other	12.5	5	--	--	12.5	5	Compliance Date: December 31, 2023

1 PAR 1134 applies to all stationary gas turbines located at non-RECLAIM and RECLAIM facilities (excluding those subject to Rule 1135 or those located at a petroleum refinery, landfills, or publically owned treatment works), regardless of the date they were permitted.

2, 3 Stationary gas turbines located in the outer continental shelf (defined in Title 40 CFR Part 55 – Outer Continental Shelf Air Regulations) are off-shore facilities and are not accessible via on-road vehicles.

4 For Alternative A, RECLAIM facilities will continue to comply with their annual facility-wide NOx allocations; there are no specific NOx Limits applicable to stationary gas turbines.

5 For Alternative A, non-RECLAIM facilities: The August 1997 version of Rule 1134 and the following NOx limits will remain in effect: gas turbines without SCR have a NOx limit that ranges between 12 and 25 ppmv and gas turbines with SCR have a NOx limit of nine ppmv.

6 Phased compliance dates are based on the total NOx inventory for turbines subject to PAR 1134 with earlier compliance dates for equipment with larger NOx emission inventories.

Table 1-2
Summary of the Proposed Project Alternatives

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Earlier Compliance Date 12/31/2022	ALTERNATIVE C Phased Compliance Dates
Air Quality	Expected to result in NOx emission reductions of 2.8 tons per day. Stationary gas turbines at affected RECLAIM facilities will transition to a command-and-control regulatory structure. The affected stationary gas turbines are expected to be retrofitted with SCR technology, or repowered or replaced. Stationary gas turbines operated at non-RECLAIM facilities are expected to be retrofitted with SCR technology, or repowered, or replaced. Upon project implementation, all stationary gas turbines 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 stationary gas turbines will not be retrofitted with air pollution control equipment, repowered, or replaced. Non-RECLAIM stationary gas turbines will continue to meet the existing NOx limits in the current version of Rule 1134.	Expected to result in NOx emission reductions of 2.8 tons per day, which is equivalent to the proposed project but achieved one year earlier than the proposed project. Upon project implementation, all stationary gas turbines at RECLAIM and non-RECLAIM facilities will achieve BARCT equivalency for NOx.	Expected to result in equivalent NOx emission reductions of 2.8 tons per day, which is equivalent to the proposed project; the quantity of emission reductions will occur incrementally due to the phased compliance dates. A portion of the overall NOx emission reductions will be achieved one year earlier (e.g., by 12/31/2022) for simple cycle gas turbines either equipped with or without SCR technology. The remaining stationary gas turbines will achieve the remaining portion of the overall NOx emission reductions by 12/31/23. Upon project implementation, all stationary gas turbines at RECLAIM and non-RECLAIM facilities will achieve BARCT equivalency for NOx.

Table 1- 2
Summary of the Proposed Project Alternatives (continued)

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Earlier Compliance Date 12/31/2022	ALTERNATIVE C Phased Compliance Dates
Significance of Air Quality Impacts	**Less than Significant:** No exceedances of the SCAQMD'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 gas turbines with air pollution control equipment (e.g., SCR technology/systems installation), or repower or replace existing stationary gas turbines, emissions from construction are expected to occur. As facilities transition their existing stationary gas turbines 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 due to the project's overall NOx emission reductions.	**Not Significant:** Alternative A would not result in an exceedance of any SCAQMD 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 SCAQMD will not achieve any emissions reductions of NOx (a pre-cursor to the formation of ozone); thus, attainment for the SCAQMD for ozone is unlikely to occur.	**Significant:** Due to having an earlier compliance date when compared to the proposed project, 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. As such, an exceedance of the SCAQMD'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 gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-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 having earlier compliance dates for gas turbines equipped with and without SCRs, the construction schedules of the affected facilities under Alternative C would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day. As such, exceedances of the SCAQMD'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 gas turbines stationary gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-year compliance period for gas turbines equipped with and without SCRs and over the 4-year compliance period for the remaining gas turbines, 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.

Table 1- 2
Summary of the Proposed Project Alternatives (concluded)

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent Compliance Deadline	ALTERNATIVE C Phased Compliance Deadline
Hazards and Hazardous Materials	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.	None of the affected facilities will be required to achieve BARCT level equivalency through compliance with the proposed project. As such, no stationary gas turbines will be retrofitted with SCR technology. Thus, no new ammonia storage tanks will be needed.	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.	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.
Significance of Hazards and Hazardous Materials Impacts	**Significant:** Based on the analysis, using 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 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 B would be equivalent to the proposed project.	**Significant:** Based on the analysis, using 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 C would be equivalent to the amount in the proposed project.

CHAPTER 2

PROJECT DESCRIPTION

PROJECT LOCATION

PAR 1134 applies to RECLAIM and non-RECLAIM stationary gas turbines that are not subject to Rule 1135 or located at petroleum refineries, landfills, or publicly owned treatment works. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. A federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (see Figure 2-1).

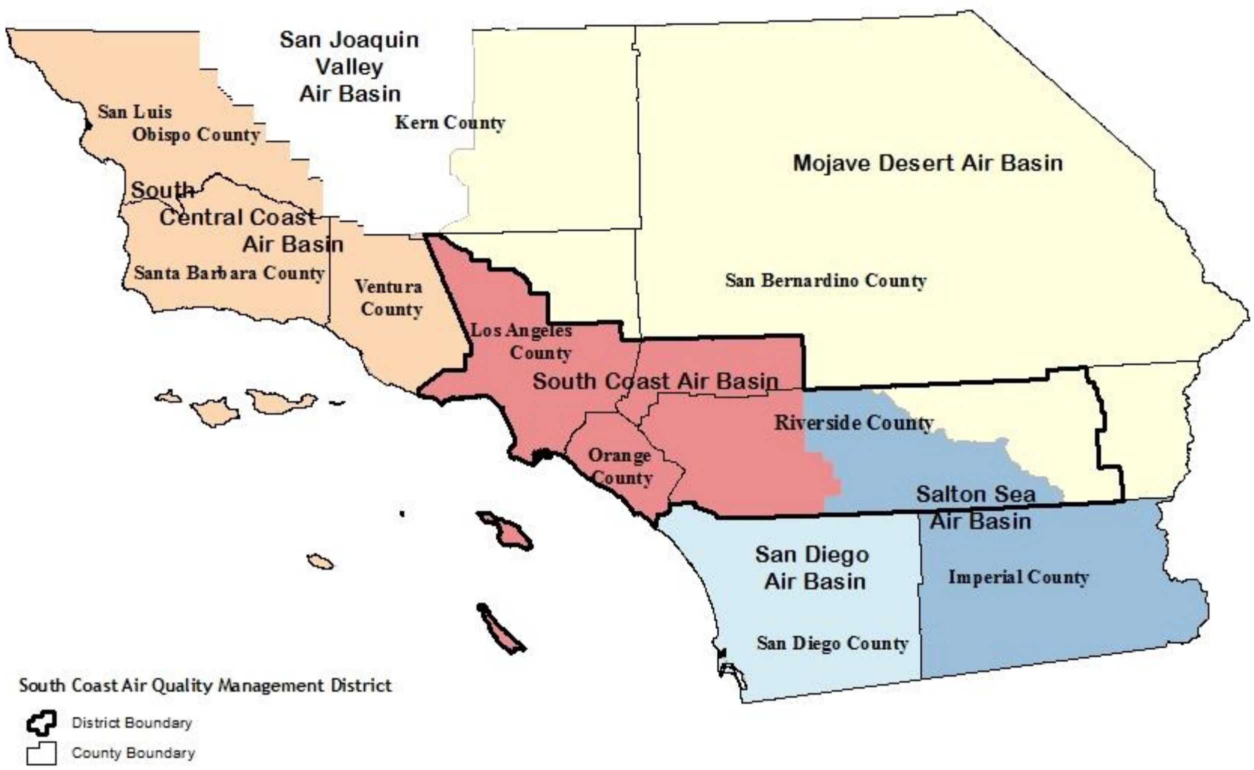

Figure 2-1
Southern California Air Basins

PROJECT BACKGROUND

Rule 1134 was adopted in 1989 and applied to stationary gas turbines rated at 0.3 MW and larger that were issued a permit to operate by the SCAQMD prior to August 4, 1989. The rule was developed as of result of the U.S. EPA's 1979 adoption of New Source Performance Standards for Stationary Gas Turbines and CARB's 1981 adoption of a Suggested Control Measure for Stationary Gas Turbines. Rule 1134 established NOx emission limits based on stationary gas turbine size megawatt rating. After adoption of the Rule in 1989, Rule 1134 was subsequently amended three times. The December 1995 amendment exempted gas turbines located on San Clemente Island and the South East Desert Air Basin. The April 1997 amendment increased the NOx concentration limit for turbines that utilized sewage digester gas. And lastly, the August 1997 amendment clarified the need for continuous emission monitoring systems (CEMS) on turbines with a power output of 2.9 MW or larger.

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, SCAQMD staff has been 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 SCAQMD Regulation XI – Source Specific Standards. SCAQMD staff has proposed amendments to Rule 1134 to transition equipment from the NOx RECLAIM program to a command-and-control regulatory structure, while achieving BARCT. PAR 1134 will assist in the transition of 18 facilities out of the RECLAIM program.

PROJECT OBJECTIVES

The main objectives of PAR 1134 are to: 1) reduce NOx emissions from stationary gas turbines 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 updating the NOx limits and incorporating new ammonia (NH3) emission limits to reflect current BARCT.

PROJECT DESCRIPTION

If adopted, PAR 1134 would: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and NH3 emission limits for stationary gas turbines to comply with BARCT; 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 - MRR Requirements for NOx and SOx Sources, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 6) revise existing exemptions to remove obsolete provisions. Implementation of the proposed project is estimated to reduce NOx emissions by 2.8 tons per day after implementation of BARCT limits.

The following is a detailed summary of key elements contained in PAR 1134. A copy of PAR 1134 can be found in Appendix A.

PAR 1134

Purpose – Subdivision (a)
PAR 1134 proposes new subdivision (a) to establish the rule's purpose, which is to reduce emissions of oxides of nitrogen from stationary gas turbines.

Applicability – Subdivision (b)
PAR 1134 proposes to clarify that the rule applies to all stationary gas turbines rated at 0.3 MW or larger and are located at non-RECLAIM and RECLAIM facilities, except those subject to Rule 1135 or are located at landfills, petroleum refineries, or publicly owned treatment works, regardless of the date they were permitted.

Definitions – Subdivision (c)
PAR 1134 proposes to delete obsolete definitions, add new definitions, and modify existing definitions to clarify and explain key concepts.

The following definitions are obsolete and are proposed to be deleted:

Chemical Processing Gas Turbine
Emission Control Plan
Peaking Gas Turbine Unit
Southeast Desert Air Basin (SEDAB)

The following are existing definitions which are proposed to be modified:

Cogeneration Turbine
Combined Cycle Gas Turbine
Emergency Standby Gas Turbine
Existing Gas Turbine
Higher Heating Value of Fuel (HHV)
Lower Heating Value of Fuel (LLV)

The following are new definitions which are proposed to be added:

Annual Capacity Factor
Duct Burner
Former RECLAIM NOx Facility
Landfill
Natural Gas
Non-RECLAIM NOx Facility
Oxides of Nitrogen (NOx) Emissions
Outer Continental Shelf
Petroleum Refinery
Produced Gas
Publicly Owned Treatment Works
RECLAIM NOx Facility
Shutdown
Simple Cycle Gas Turbine
Start-up
Tuning

Emissions Limitations – Renumbered Subdivision (d)
Subdivision (c) is proposed to be renumbered to subdivision (d). Due to the proposed deletion of the term "unit" throughout PAR 1134, any reference to unit is also proposed to be deleted from subdivision (d) and replaced with the terms "stationary gas turbine" or "gas turbine", as appropriate.

Modified paragraph (d)(1) proposes to add a provision of applicability to existing turbines currently subject to Rule 1134 on an interim basis until the existing gas turbine can comply with the limits set forth in Table 1 of paragraph (d)(3) or by January 1, 2024, whichever comes first. Turbines that are a RECLAIM NOx source or a former RECLAIM NOx source are not subject to paragraph (d)(1).

To help achieve the emission reduction goals of the 2016 AQMP and AB 617 requirement of BARCT implementation, PAR 1134 paragraphs (d)(1) and (d)(2) set the compliance date for electric generating units as January 1, 2024.

New paragraph (d)(3) proposes to add the following emissions limits for stationary gas turbines with a compliance date of no later than January 1, 2014. It is important to note that the NOx emission limit in Table 1 would not apply during start-up, shutdown, and tuning.

PAR 1134, Table 1: Emissions Limits for Stationary Gas Turbines

Fuel Type	NO_X (ppmv)	Ammonia (ppmv)	Oxygen Correction (%, dry)
Liquid – Turbines Located on Outer Continental Shelf	30	5	15
Natural Gas – Combined Cycle	2	5	15
Natural Gas – Pipeline Gas Turbine	8	5	15
Natural Gas – Simple Cycle	2.5	5	15
Produced Gas	5	5	15
Produced Gas – Turbines Located on Outer Continental Shelf	15	5	15
Other	12.5	5	15

New paragraph (d)(4) proposes to include requirements for start-up, shutdown, and tuning periods in each stationary gas turbine's permit. The requirements will specify duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings. Requirements for start-up, shutdown, and tuning of existing electric generating units are currently in the permits for that equipment. Additionally, start-up, shutdown, and tuning are unique to each unit and evaluated during the permitting process. Therefore, PAR 1134 does not specify specific start-up, shutdown, and tuning requirements, but instead states that the requirements will be put in each stationary gas turbine's permit.

New subparagraph (d)(5)(B) proposes to allow the emissions limits of turbines that are installed after [*Date of Adoption*] to be averaged over a 60-minute rolling average. For stationary gas turbines installed before [*Date of Adoption*], new subparagraph (d)(5)(A) allows the option for turbines to retain their current averaging time.

New paragraph (d)(6) proposes to prohibit the use of liquid fuel in a stationary gas turbine except for Outer Continental Shelf gas turbines which do not have access to natural gas. Outer Continental Shelf gas turbines burning 10 percent or less liquid fuel will be subject to the produced gas limit.

New paragraph (d)(7) proposes to require the facility owner or operator of a stationary gas turbine to submit applications to reconcile their permits with Rule 1134 by July 1, 2022. As facilities transition out of RECLAIM to Rule 1134, their permits will need to be revised to remove references to RECLAIM rules and include references to Rule 1134.

Monitoring and Source Testing – Subdivision (e)

SCAQMD has committed to developing a new, separate rule, to be named Rule 113, to address monitoring, recordkeeping, and reporting requirements (MRR) for NOx and SOx emissions. Once Rule 113 is adopted, all Rule 1134 equipment will be required to transition to complying with the MRR requirements in Rule 113. For the interim period, the intention of the PAR 1134 MRR is to maintain current MRR for all facilities and minimize the RECLAIM reporting requirements. Turbines that are non-RECLAIM NOx sources already comply with Rule 218 – Continuous

Emission Monitoring (Rule 218) in addition to other MRR requirements. Therefore, requiring compliance with Rule 218 will not affect these units.

Paragraph (e)(1) applies to gas turbines 2.9 MW and larger located at non-RECLAIM NOx facilities and proposes to require compliance with SCAQMD Rule 218 – Continuous Emission Monitoring.

Subparagraph (e)(2)(A) proposes to require the owner or operator of any existing gas turbine located at a non-RECLAIM NOx source not operating with a continuous emission monitoring systems to conduct a source test to demonstrate compliance with NOx and carbon monoxide concentration and demonstrated perfect efficiency (ERR) if applicable.

New subparagraph (e)(2)(B) proposes to require stationary gas turbines operating with a catalytic control device to conduct source testing to determine compliance with the ammonia concentration emission limit. Alternatively, a certified ammonia CEMS may be used to determine compliance in lieu of source testing.

Subparagraph clause (e)(2)(C)(i) proposes to determine compliance with NOx concentration limits for turbines not equipped with NOx CEMS using source tests that shall be conducted every calendar year. Clause (e)(2)(C)(ii) proposes to allow turbines that emit less than 25 tons per year of NOx to source test at least once every three calendar years. Additionally, clause (e)(2)(C)(iii) proposes to allow for turbines not equipped with ammonia CEMS to source test quarterly when initially installed and after an annual test is failed. After four consecutive compliant ammonia source tests, source testing of ammonia may be conducted every calendar year. Turbines currently testing for ammonia annually may retain that schedule until an annual test is failed.

New paragraph (e)(3) applies to RECLAIM facilities and requires that current MRR be maintained until the facility leaves RECLAIM.

New paragraph (e)(4) applies to former RECLAIM facilities. To demonstrate compliance with the NOx emissions limits, these facilities will be required to comply with SCAQMD Rule 2012 with the exception of the following provisions that reference reporting requirements or that do not apply to stationary gas turbines:

- Rule 2012 paragraphs (c)(3) through (c)(8), reporting and Super Compliant facilities;
- Rule 2012 subparagraphs (d)(2)(B) through (d)(2)(E), reporting and emission factors;
- Rule 2012 subdivision (e) NOx Process Units;
- Rule 2012 paragraphs (g)(5) through (g)(8), reporting;
- Rule 2012 paragraphs (h)(1), (h)(2), and (h)(4) through (h)(6), reporting and mass emissions; (F) Rule 2012 subdivisions, (i), (k), and (l), Recordkeeping, Exemptions, Appeals; and
- Rule 2012 Reported Data and Transmitting/Reporting Frequency requirements from Appendix A – "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NOx) Emissions."

Test Methods – Subdivision (f)

Subdivision (f) proposes to add SCAQMD Method 207.1 to determine ammonia concentration during source testing.

Recordkeeping – Subdivision (g)

Paragraph (g)(3) proposes to require the use of a data acquisition system as a replacement for monthly reporting.

Exemptions – Subdivision (h)

PAR 1134 proposes to remove several exemptions as follows: Subparagraph (h)(1)(C) is proposed to be removed since those units must comply with applicable limits in Proposed Rule 1109.1 – Refinery Equipment; Subparagraph (h)(1)(D) and (h)(2)(B) is proposed to be removed since the Southeast Desert Air Basin is outside the SCAQMD; and Subparagraph (h)(2)(C) is proposed to be removed since there are no turbines located on San Clemente Island and therefore the exemption is unnecessary.

Paragraph (h)(3) proposes to exempt existing combined cycle gas turbines at 2.5 ppmv NOx at 15% oxygen on a dry basis from the emissions limitations in paragraph (d)(3), with the condition that the units keep their NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit.

To address low-use stationary gas turbines, a low-use provision, paragraph (h)(4) proposes to allow low-use equipment to continue operating without retrofit provided that they: do not exceed annual capacity factor limits; include annual capacity factor limits in their permit; and keep the NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit. The annual capacity factor, paragraph (c)(1), is defined as the ratio between the actual annual input and the annual maximum heat input if operated continuous over one year. The annual capacity factor limits for gas turbines in subparagraph (h)(4)(A) is less than twenty-five percent in one calendar year and less than ten percent averaged over three years. In order to obtain the low-use exemption, subparagraph (h)(4)(B) requires that an application for the low-use exemption be submitted by July 1, 2022. Subparagraph (h)(4)(C) requires that annual capacity factor to be determined annually and submitted to the Executive Officer no later than March 1 following the reporting year. If a unit exceeds the annual capacity factor, subparagraph (h)(4)(D) states the owner or operator is subject to a notice of violation for each year of exceedance and for each annual and/or three-year exceedance. Clause (h)(4)(D)(iii) requires that after two years of the date of reported exceedance, the unit must come into compliance with the emissions limits in Table 1. There are also interim milestone requirements in clauses (h)(4)(D)(i) and (h)(4)(D)(ii): submitting a permit application within six months from the date of reported exceedance and a CEMS plan within six months from the date of permit application submittal.

Paragraph (h)(5) proposes to exempt stationary gas turbines that do not use selective catalytic reduction or other processes that add ammonia into the exhaust gas from ammonia concentration limits and source testing requirements.

SUMMARY OF AFFECTED EQUIPMENT

Among the 34 facilities subject to PAR 1134 there are approximately 12 RECLAIM facilities and four non-RECLAIM facilities for a total of 16 facilities that are expected to be affected by PAR 1134. The remaining facilities contain stationary gas turbines that either currently meet the proposed emission limits or are eligible for exemptions from the emission limits in PAR 1134. Amongst the 16 facilities that are affected by PAR 1134, approximately 30 stationary gas turbines would need to be replaced, repowered, or retrofitted with air pollution control equipment in order to comply with the NOx limits in PAR 1134. Upon full implementation of BARCT, PAR 1134 is estimated to reduce NOx emissions by approximately 2.8 tons 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 stationary gas turbines at facilities that would be subject to the requirements in PAR 1134.

Table 2-1
Affected Industries Subject to PAR 1134

NAICS Codes	Description of Industry	Number of Units
423830	Industrial Machinery and Equipment Merchant Wholesalers	1
622110	General Medical and Surgical Hospitals	1
622110	General Medical and Surgical Hospitals	2
611310	Colleges, Universities, and Professional Schools	2
211111	Crude Petroleum and Natural Gas Extraction	2
486210	Pipeline Transportation of Natural Gas	4
221112	Fossil Fuel Electric Power Generation	1
488111	Air Traffic Control	2
221112	Fossil Fuel Electric Power Generation	1
922140	Correctional Institutions	1
921190	Other General Government Support	1
611310	Colleges, Universities, and Professional Schools	1
211111	Crude Petroleum and Natural Gas Extraction	3
211111	Crude Petroleum and Natural Gas Extraction	3
325412	Pharmaceutical Preparation Manufacturing	2
211111	Crude Petroleum and Natural Gas Extraction	1
211111	Crude Petroleum and Natural Gas Extraction	2

Table 2-2 identifies the number of stationary gas turbines that would require modifications to comply with BARCT for the 16 affected facilities. The following list describes stationary gas turbines that would require modifications in order to meet the updated BARCT NOx and NH3 concentration limits in PAR 1134:

1) Stationary Gas Turbines with SCR: seven stationary gas turbines may need modifications in order to comply with PAR 1134 if they continue operating. Compliance with PAR 1134 would require modifications to the existing SCR systems, additional ammonia deliveries, or replacement or repowering of the existing SCR system. The analysis in this SEA applies

the most conservative assumptions to represent a "worst-case" scenario therefore it is assumed that these seven stationary gas turbines would replace their existing SCR systems to comply with PAR 1134.

2) Stationary Gas Turbines without SCR: Of the 30 stationary gas turbines, 17 units currently are not equipped with SCR post-combustion technology for NOx reduction and are expected to need modifications in order to comply with PAR 1134 if they continue operating. Compliance with PAR 1134 for these 17 stationary gas turbines would require installation of post-combustion technology which is likely to be an SCR system that would also include installation of an ammonia or urea tank and ammonia or urea deliveries once the SCR system is operational.

3) Stationary Gas Turbines located in the Outer Continental Shelf (OCS): There are six stationary gas turbines located in the OCS that may need modifications in order to comply with PAR 1134 if they continue operating. Typically for a stationary gas turbine when deciding the most effective NOx controls, installing an SCR system would be the primary post-combustion technology for NOx reduction however, there is no way to safely deliver and store aqueous ammonia for stationary gas turbines located in the OCS due to space constraints on the platforms and risk of exposure during catastrophic failure of an ammonia tank to workers. Thus, as determined in the technology assessment in the Staff Report[8] replacement or repowering of the existing stationary gas turbines with equipment utilizing pre-combustion technology is the most likely scenario to ensure OCS stationary gas turbines meet BARCT for NOx.

Table 2-2
Summary of Stationary Gas Turbines and Expected Modifications

Description of Modifications	Total
Gas Turbines expected to install new SCR	24
Gas Turbines expected to be replaced	6
Total Number of Affected Stationary Gas Turbines	30

Note: Amongst the affected facilities the size of stationary gas turbines varies between approximately 1 MW and 50 MW. Thus, modifications required to comply with PAR 1134 will vary based on the scale of NOx reductions needed and the size of the affected equipment.

[8] SCAQMD, Preliminary Draft Staff Report for Proposed Amended Rule 1134, December 2018. http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1134/par-1134---pdsr---final.pdf

The 2015 NOx emission inventory for turbines that will be subject to PAR 1134 is 3.3 tons per day as presented in Table 2-3.

Table 2-3
NOx Emission Inventory and Electricity Generation Capacity

Equipment Type	2015 NOx Emission Inventory (tons per day)	Electriciuty Generation Capacity (MWh)
Combined Cycle Turbines	0.9	210
Simple Cycle Turbines	1.7	534
Produced Gas Turbines	0.2	60
Outer Continental Shelf Gas Turbines	0.5	15
TOTAL	3.3	819

Key: MWh = megawatt-hour

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, carbon monoxide (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 1134 and subsequently retrofitted with NOx control equipment.

Turbines: Gas turbines convert energy stored in a fluid into mechanical energy by channeling the fluid through a system of stationary and moving vanes. The moving vanes are attached to a rotor to turn either a shaft, producing work output in the form of torque, or to generate velocity and pressure energy in a jet. Gas turbines can be used in combined-cycle cogeneration and simple-cycle arrangements. Combined cycle systems are typically used for very large systems and generally have higher capital costs than simple cycle gas turbines. Gas turbines are used to produce both electricity and steam. Gas turbines can operate on both gaseous (e.g., natural gas) and liquid fuels (e.g., diesel). For the purpose of the analysis in this SEA, controlling NOx emissions from gas turbines is assumed to be accomplished with post-combustion SCR technology or pre-combustion Dry Low-NOx for stationary gas turbines located in the OCS.

One portion of the BARCT assessment for PAR 1134 evaluated technologically feasible NOx emissions control technologies specific to stationary gas turbines. 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 electric power generating units: 1) dry low-NOx or lean premix emission combustors for natural gas, landfill gas, and produced gas turbines; 2) water or steam injection for natural gas, landfill gas, sewage digester gas, and produced gas turbines; 3) catalytic combustion for natural gas and produced gas turbines; 4) selective catalytic reduction (SCR) for natural gas, landfill gas, sewage digester gas, and produced gas turbines; and 6) catalytic absorption systems for natural gas turbines. PAR 1134 is expected to result in 17 facilities either installing new or modifying existing air pollution control equipment as part of meeting updated BARCT and reducing NOx emissions. The type of air pollution control equipment that is commonly used at a facility to reduce NOx emissions is dependent upon a variety of factors such as the age of the existing air pollution control equipment, the size of the stationary gas turbine, the amount of NOx emission reductions that can be achieved, and whether the stationary gas turbine is: 1) designed with pre-combustion technologies or features that help minimize the formation of NOx; 2) equipped with post-combustion air pollution control equipment; or 3) equipped with a combination of pre- and post-combustion control technologies. The following summarizes the technology assessment of pre- and post-combustion technologies that were analyzed as part of the BARCT assessment for PAR 1134.

Pre-Combustion Technologies

Dry Low-NOx or Lean Premix Emission Combustors (Natural Gas, Landfill Gas, Produced Gas Turbines)

Prior to combustion, gaseous fuel and compressed air are pre-mixed, minimizing localized hot spots that produce elevated combustion temperatures and therefore, less NOx is formed. Atmospheric nitrogen from the combustion air is mixed with air upstream of the combustor at deliberately fuel-lean conditions. Approximately twice as much air is supplied as is actually needed to burn the fuel. This excess air is a key to limiting NOx formation, as very lean conditions cannot produce the high temperatures that create thermal NOx. Using this technology, NOx emissions, without further controls, have been demonstrated at single digits (< 9 ppmv at 15% oxygen, dry). The technology is engineered into the combustor that becomes an intrinsic part of the turbine design. Fuel staging or air staging is utilized to keep the flame within its operating boundaries. It is not available as a “retrofit” technology and must be designed for each turbine application.

Water or Steam Injection for Turbines (Natural Gas, Landfill Gas, Sewage Digester Gas, Produced Gas Turbines)

Demineralized water is injected into the combustor through the fuel nozzles to lower flame temperature and reduce NOx emissions. Water or steam provides a heat sink that lowers flame temperature. Imprecise application leads to some hot zones so NOx is still created. NOx levels in natural gas turbines can be lowered by 80% to 25 ppmv at 15% oxygen on a dry basis. Addition of water or steam increases mass flow through the turbine and creates a small amount of additional power. The addition of water increases carbon monoxide emissions and there is added cost to demineralize the water. Turbines using water or steam injection has increased maintenance due to erosion and wear.

Catalytic Combustion (Natural Gas, Produced Gas Turbines)

A catalytic process is used instead of a flame to combust the natural gas. Flameless combustion lowers combustion temperature resulting in reduced NOx formation. The overriding constraints are operating efficiency over a wide operating range of the turbine. Initial engine demonstrations have shown that catalytic combustion reducing NOx emissions. In its first commercial installation, NOx concentrations were lowered from approximately 20 ppmv to below 3 ppmv at 15% O2 oxygen on a dry basis without post-combustion controls. Several turbine manufacturers are in the development stage to incorporate this technology.

Post-Combustion Technologies

Selective Catalytic Reduction (Natural Gas, Landfill Gas, Sewage Digester Gas, Produced Gas Turbines)

Selective Catalytic Reduction is the primary post-combustion technology for NOx reduction and is widely used in turbines. The technology can reduce NOx emissions 95 percent or greater. In many cases the NOx reduction is limited by the release of other pollutants (ammonia and carbon monoxide), space constraints, or reaches the practical limit of the NOx measuring device. Many stationary gas turbines already utilize selective catalytic reduction. Further reductions could be possible by adding catalyst modules. From observations made during site visits, space is not readily available to add catalyst modules and would require construction.

Ammonia is injected into the flue gas and reacts with NOx to form nitrogen and water. Catalysts are made from ceramic materials and active catalytic components of base metals, zeolites, or precious metals. The catalyst may be configured into plates but many new systems are configured into honeycombs to ensure uniform dispersion and reduce ammonia emissions to below 5 ppmv. The reductant, ammonia, is available as anhydrous ammonia, aqueous ammonia, or urea. Anhydrous ammonia is toxic and SCAQMD does not permit new installations of anhydrous ammonia storage tanks. Urea is an alternative but requires conversion to ammonia to be used. Most new selective catalytic reduction installations utilize aqueous ammonia in a 19 percent solution.

To perform optimally, the gas temperature in the control device should be between 400 degrees Fahrenheit and 800 degrees Fahrenheit. During start-up and shutdown, the temperature will be below optimal range greatly reducing the effectiveness. Thus, NOx concentration limits are generally not applicable during start-up or shutdown. Newer stationary gas turbines reduce the low temperature periods where emissions are out of control.

The catalyst is susceptible to “poisoning” if the flue gas contains contaminants including sulfur compounds, particulates, reagent salts, or siloxanes. These contaminants are readily found in landfill gas, sewage digester gas, and other biogas. Poisoned catalysts require cleaning or replacement resulting in additional costs and extended periods of non-operation for the stationary gas turbine. In those cases, filtering may be used to reduce the impacts on the catalyst.

Catalytic Absorption Systems for Turbines

Catalytic absorption is based on an integration of catalytic oxidation and absorption technology resulting in similar control efficiency as selective catalytic reduction without the use of ammonia. Carbon monoxide and nitrogen oxide catalytically oxidize to carbon dioxide and nitrogen dioxide and the nitrogen dioxide molecules are absorbed onto the catalyst. The catalyst is a platinum-based substrate with a potassium carbonate coating. The catalyst tends to be very sensitive to sulfur (e.g., can be poisoned by sulfur causing failure), even the small amounts in pipeline natural gas. Initial issues regarding catalyst failures have been addressed by conducting more frequent and extensive catalyst washing. At one facility, NOx emission levels were best achieved when all three catalyst layers are washed about every four months. During the wash process, the turbine is non-operational for about three days.

CHAPTER 3

EXISTING SETTING

INTRODUCTION

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

The 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 1134) 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 SCAQMD's Public Information Center at SCAQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765; by contacting Fabian Wesson, Public Advisor by calling (909) 396-2039 or by emailing at PICrequests@aqmd.gov.

EXISTING SETTING

In general, Rule 1134, was developed to reduce NOx emissions stationary gas turbines. 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 version of Rule 1134.

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 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 microgram per cubic meter (µg/m3) by 2025; the 2006 24-hour PM2.5 standard (35 µg/m3) by 2019; and the revoked 1979 1-hour ozone standard (120 ppb) by 2023. The 2016 AQMP consists of three components: 1) the SCAQMD'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 emissions reductions.

Rule 1134

Rule 1134 was adopted in 1989. The rule applies to stationary gas turbines rated at 0.3 MW and larger that were issued a permit to operate by the SCAQMD prior to August 4, 1989. The origin of the rule can be traced to a New Source Performance Standard for Stationary Gas Turbines that was promulgated by the U.S. EPA in 1979. In 1981, the CARB adopted a Suggested Control Measure for this same equipment. Rule 1134 was subsequently amended three times to provide regulatory flexibility. In particular, in December 1995, Rule 1134 was amended to exempt gas turbines located on San Clemente Island and the South East Desert Air Basin. In April 1997, Rule 1134 was amended to increase the NOx concentration limit for turbines utilizing sewage digester gas. In August 1997, Rule 1134 was amended to clarify the need for continuous emission monitoring systems (CEMS) on turbines with a power output of 2.9 MW or larger. U.S. EPA approved Rule 1134 into the SIP on August 1, 2000.

Beginning in 1994, a large number of utilities and third-party-owned cogenerators were included in the RECLAIM program and as such were not required to meet the NOx concentration limits contained in Rule 1134. However, gas turbines permitted prior to August 4, 1989 and used at publicly-owned treatment works (POTWs), landfills, hospitals and other public facilities, and sources which were not subject to the RECLAIM program, were still required to meet the concentration limits in Rule 1134. In addition, new turbines installed at non-RECLAIM facilities after August 4, 1989 were also not subject to Rule 1134.

AIR QUALITY

It is the responsibility of SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, CO, NO2, PM10, PM2.5, SO2, and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM10 and SO2, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and NAAQS for each of these pollutants and their effects on health are summarized in Table 3-1. SCAQMD monitors levels of various criteria pollutants at 38 monitoring stations. The 2016 air quality data (the latest data available) from SCAQMD's monitoring stations are presented in Table 3-2.

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/m3	
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 (NO2)	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 (SO2)	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 (H2S)	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 O3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

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

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

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

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

Table 3-2 (Continued)
2016 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	0.103	0.078	0.071	0	4	1	2	4
2	Northwest Coastal LA County	365	0.085	0.073	0.066	0	2	0	0	2
3	Southwest Coastal LA County	361	0.087	0.08	0.067	0	2	1	0	3
4	South Coastal LA County 1	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 2	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 3	365	0.079	0.059	0.055	0	0	0	0	0
4	I-710 Near Road##	--	--	--	--	--	--	--	--	--
6	West San Fernando Valley	364	0.122	0.098	0.086	0	23	14	9	23
8	West San Gabriel Valley	358	0.126	0.09	0.082	1	18	15	12	19
9	East San Gabriel Valley 1	366	0.146	0.106	0.095	4	39	25	30	40
9	East San Gabriel Valley 2	362	0.148	0.114	0.098	6	52	31	38	55
10	Pomona/Walnut Valley	360	0.127	0.092	0.087	1	26	14	20	29
11	South San Gabriel Valley	359	0.111	0.081	0.074	0	6	2	9	6
12	South Central LA County	365	0.098	0.071	0.064	0	1	0	1	1
13	Santa Clarita Valley	366	0.13	0.115	0.1	2	57	35	29	59
ORANGE COUNTY										
16	North Orange County	365	0.103	0.078	0.075	0	6	3	3	7
17	Central Orange County	354	0.103	0.074	0.071	0	4	0	2	4
17	I-5 Near Road##	--	--	--	--	--	--	--	--	--
18	North Coastal Orange County	366	0.09	0.069	0.065	0	0	0	0	0
19	Saddleback Valley	365	0.122	0.093	0.079	0	13	6	5	13
RIVERSIDE COUNTY										
22	Corona/Norco Area	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	357	0.142	0.104	0.097	1	69	47	33	71
23	Metropolitan Riverside County 3	365	0.14	0.106	0.095	1	65	43	34	70
24	Perris Valley	366	0.131	0.098	0.092	1	55	30	23	56
25	Elsinore Valley	360	0.124	0.093	0.087	0	44	25	15	45
26	Temecula Valley	355	0.092	0.081	0.077	0	19	6	0	20
29	San Gorgonio Pass	358	0.128	0.106	0.094	1	52	39	26	54
30	Coachella Valley 1**	363	0.103	0.092	0.087	0	46	20	6	48
30	Coachella Valley 2**	331	0.099	0.089	0.081	0	27	12	3	29
30	Coachella Valley 3**	--	--	--	--	--	--	--	--	--
SAN BERNARDINO COUNTY										
32	Northwest San Bernardino Valley	366	0.156	0.116	0.11	10	88	65	53	89
33	I-10 Near Road##	--	--	--	--	--	--	--	--	--
33	CA-60 Near Road##	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	362	0.139	0.105	0.098	3	49	39	34	52
34	Central San Bernardino Valley 2	366	0.158	0.118	0.114	10	106	76	70	108
35	East San Bernardino Valley	364	0.145	0.119	0.103	3	97	71	55	100
37	Central San Bernardino Mountains	365	0.163	0.121	0.116	9	101	80	64	103
38	East San Bernardino Mountains	--	--	--	--	--	--	--	--	--
DISTRICT MAXIMUM			**0.163**	**0.121**	**0.116**	**10**	**106**	**80**	**70**	**108**
SOUTH COAST AIR BASIN			**0.163**	**0.121**	**0.116**	**17**	**132**	**103**	**83**	**132**

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

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

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

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

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

Table 3-2 (Continued)
2016 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	366	13.4	2.5
2	Northwest Coastal LA County	--	--	--
3	Southwest Coastal LA County	363	9.7	5.7
4	South Coastal LA County 1	--	--	--
4	South Coastal LA County 2	--	--	--
4	South Coastal LA County 3	366	17.8	12
4	I-710 Near Road##	--	--	--
6	West San Fernando Valley	--	--	--
8	West San Gabriel Valley	--	--	--
9	East San Gabriel Valley 1	--	--	--
9	East San Gabriel Valley 2	--	--	--
10	Pomona/Walnut Valley	--	--	--
11	South San Gabriel Valley	--	--	--
12	South Central LA County	--	--	--
13	Santa Clarita Valley	--	--	--
ORANGE COUNTY				
16	North Orange County	--	--	--
17	Central Orange County	--	--	--
17	I-5 Near Road##	--	--	--
18	North Coastal Orange County	366	3.3	2.1
19	Saddleback Valley	--	--	--
RIVERSIDE COUNTY				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	366	5.6	2
23	Metropolitan Riverside County 3	--	--	--
24	Perris Valley	--	--	--
25	Elsinore Valley	--	--	--
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1**	--	--	--
30	Coachella Valley 2**	--	--	--
30	Coachella Valley 3**	--	--	--
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	--	--	--
33	I-10 Near Road##	--	--	--
33	CA-60 Near Road##	--	--	--
34	Central San Bernardino Valley 1	363	6.3	2
34	Central San Bernardino Valley 2	--	--	--
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
DISTRICT MAXIMUM			**17.8**	**12**
SOUTH COAST AIR BASIN			**17.8**	**12**

ppb = parts per billion
** Salton Sea Air Basin
-- = 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.

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

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

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

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

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

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

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

SUSPENDED PARTICULATE MATTER PM2.5 [f]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m³, 24-hour	98th Percentile Conc. in µg/m³ 24-hr	No. (%) Samples Exceeding Federal Std > 35 µg/m³, 24-hour	Annual Average AAM Conc.[g)] µg/m³
LOS ANGELES COUNTY						
1	Central LA	357	44.39	27.3	2(0.6%)	11.83
2	Northwest Coastal LA County	--	--	--	--	--
3	Southwest Coastal LA County	--	--	--	--	--
4	South Coastal LA County 1	356	29.37	23.56	0	10.36
4	South Coastal LA County 2	350	28.93	22.05	0	9.62
4	South Coastal LA County 3	--	--	--	--	--
4	I-710 Near Road##	352	33.31	26.09	0	12.03
6	West San Fernando Valley	113	30.05	24.59	0	9.23
8	West San Gabriel Valley	119	29.21	25.38	0	9.59
9	East San Gabriel Valley 1	122	32.17	29.01	0	10.15
9	East San Gabriel Valley 2	--	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	120	46.59	25.13	2(1.7%)	11.75
12	South Central LA County	115	36.35	26.35	1(0.9%)	11.13
13	Santa Clarita Valley	--	--	--	--	--
ORANGE COUNTY						
16	North Orange County	--	--	--	--	--
17	Central Orange County	349	44.45	24.02	1(0.3%)	9.47
17	I-5 Near Road##	--	--	--	--	--
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	117	24.79	13.41	0	7.36
RIVERSIDE COUNTY						
22	Corona/Norco Area	--	--	--	--	--
23	Metropolitan Riverside County 1	357+	39.12	31.65	4(1.1%)	12.54
23	Metropolitan Riverside County 3	352+	45.64	35.14	6(1.7%)	14.02
24	Perris Valley	--	--	--	--	--
25	Elsinore Valley	--	--	--	--	--
26	Temecula Valley	--	--	--	--	--
29	San Gorgonio Pass	--	--	--	--	--
30	Coachella Valley 1**	112	14.71	12.43	0	5.53
30	Coachella Valley 2**	115	25.84	15.04	0	7.74
30	Coachella Valley 3**	--	--	--	--	--
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	--	--	--	--	--
33	I-10 Near Road##	--	--	--	--	--
33	CA-60 Near Road##	347*+	44.14	33.02	6(1.7%)	14.73
34	Central San Bernardino Valley 1	111+	30.45	26.25	0	12.04
34	Central San Bernardino Valley 2	113+	32.54	27.12	0	10.84
35	East San Bernardino Valley	--	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--	--
38	East San Bernardino Mountains	55	28.42	22.14	0	6.83
DISTRICT MAXIMUM			**46.6+**	**35.1+**	**6+**	**14.73+**
SOUTH COAST AIR BASIN			**46.6+**	**35.1+**	**9+**	**14.73+**

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

= 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/m³) 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 samples were collected every 3 days at all sites except for station numbers 072, 077, 087, 3176, 4144 and 4165, where samples were taken daily, and station number 5818 where samples were taken every 6 days. PM2.5 statistics listed above are for the FRM data only. FEM PM2.5 continuous monitoring instruments were operated at some of the above locations for special purposes studies.

g Both federal and state standards are annual average (AAM) > 12.0 µg/m³.

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

μg/m³= micrograms per cubic meter of air
-- =Pollutant not monitored
**Salton Sea Air Basin
*Incomplete Data
= 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/m³) 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/m³ and 0.06 μ/m³.

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

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

Carbon Monoxide

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

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

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

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

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

In 2004, SCAQMD formally requested the U.S. EPA to re-designate the Basin from 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 SCAQMD’s request for re-designation from non-attainment to attainment for CO, effective June 11, 2007.

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

Ozone

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

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

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

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

In 2016, SCAQMD regularly monitored ozone concentrations at 29 locations in the Basin and the Coachella Valley portion of the Salton Sea Air Basin. Maximum ozone concentrations (fourth highest concentration ppm 8-hour) for all areas monitored were below the stage 1 episode level (0.20 ppm) and below the health advisory level (0.15 ppm) (see Table 3-2). All counties in the Basin, as well as the Coachella Valley, exceeded the level of the new 2015 (0.070 ppm), the former 2008 (0.075 ppm), and/or the 1997 (0.08 ppm) 8-hour ozone NAAQS in 2016. While not all stations had days exceeding the previous 8-hour standards, all monitoring stations except two (South Coastal LA County 3 and North Coastal Orange County) had at least one day over the 2015 federal ozone standard (70 ppb).

In 2016, the maximum ozone concentrations in the Basin continued to exceed federal standards by wide margins. Maximum 1-hour and 8-hour average ozone concentrations were 0.163 ppm and 0.121 ppm, respectively (the maximum 1-hour and 8-hour average was recorded in the Central San Bernardino Mountain area). The maximum 8-hour concentration of 0.121 ppm was 173 percent of the new federal standard (0.070 ppm). The maximum 1-hour concentration was 181 percent of the 1-hour state ozone standard of 0.09 ppm. The 8-hour average concentration was 173 percent of the 8-hour state ozone standard of 0.070 ppm.

Nitrogen Dioxide

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 NO_x. 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 $PM_{2.5}$ and PM_{10}.

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 2016, nitrogen dioxide concentrations were monitored at 27 locations. No area of the Basin or SSAB exceeded the federal or state standards for NO_2. 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. NO_x emission reductions continue to be necessary because it is a precursor to both ozone and PM ($PM_{2.5}$ and PM_{10}) 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) SR-60 near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland; and (4) I-10 near-road, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

The longest operating near-road station in the Basin, adjacent to I-5 in Orange County, has not exceeded the level of the 1-hour 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 2016 at any of the six locations monitored the Basin. The maximum 1-hour SO2 concentration was 17.8 ppb, as recorded in the South Coastal Los Angeles County area. The 99th percentile of 1-hour SO2 concentration was 12 ppb, as recorded in South Coastal Los Angeles County area. Though SO2 concentrations remain well below the standards, SO2 is a precursor to sulfate, which is a component of fine particulate matter, PM10, and PM2.5. Historical measurements showed concentrations to be well below standards and monitoring has been discontinued.

Particulate Matter (PM10 and PM2.5)

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

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

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

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

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

On December 14, 2012, U.S. EPA strengthened the annual NAAQS for PM2.5 to 12 µg/m3 and, as part of the revisions, a requirement was added to monitor near the most heavily trafficked roadways in large urban areas. Particle pollution is expected to be higher along these roadways as a result of direct emissions from cars and heavy-duty diesel trucks and buses. SCAQMD has installed the two required PM2.5 monitors by January 1, 2015, at locations selected based upon the existing near-roadway NO2 sites that were ranked higher for heavy-duty diesel traffic. The locations are: (1) I-710, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; and (2) SR-60, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland. These near-road sites measure PM2.5 daily with FRM filter-based measurements.

Lead

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

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

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

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

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

Sulfates

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

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

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

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

Vinyl Chloride

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

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

Volatile Organic Compounds

It should be noted that there are no state or 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 SCAQMD’s primary mandate is attaining the state and NAAQS for criteria pollutants within the Basin, SCAQMD also has a general responsibility pursuant to Health and Safety Code Section 41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires SCAQMD to implement airborne toxic control measures (ATCM) adopted by CARB and to implement the Air Toxics “Hot Spots” Act. As a result, SCAQMD has regulated pollutants other than criteria pollutants such as TACs, GHGs, and stratospheric ozone depleting compounds. SCAQMD has developed a number of rules to control non-criteria pollutants from both new and existing sources. These rules originated through state directives, Clean Air Act (CAA) requirements, or the SCAQMD rulemaking process.

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

The following subsections summarize the existing setting for 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). SCAQMD can either directly implement NESHAPs or adopt rules that contain requirements at least as stringent as the NESHAP requirements. However, since NESHAPs often apply to sources in the Basin that are controlled, many of the sources that would have been subject to federal requirements already comply or are exempt.

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

The federal toxics program recognizes diesel engine exhaust (diesel particulate matter or DPM) as a health hazard; however, DPM itself is not one of their listed 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 SCAQMD and other air districts through the adoption of regulations of equal or greater stringency. Generally, the ATCMs reduce emissions to achieve exposure levels below a determined health threshold. If no such threshold levels are determined, emissions are reduced to the lowest level achievable through the best available control technology unless it is determined that an alternative level of emission reduction is adequate to protect public health.

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

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

SCAQMD

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

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

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

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

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

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

2004 Addendum: The 2004 Addendum was adopted by the SCAQMD Governing Board on April 2, 2004, and served as a status report regarding implementation of the various mobile and stationary source strategies in the 2000 ATCP and introduced new measures to further address air toxics. The main elements of the 2004 Addendum were to address the progress made in the implementation of the 2000 ATCP control strategies; provide a historical perspective of air toxic emissions and current air toxic levels; incorporate the CIRS approved in 2003 and additional measures identified in the 2003 AQMP; project future air toxic levels to the extent feasible; and summarize future efforts to develop the next ATCP. Significant progress had been made in implementing most of SCAQMD strategies from the 2000 ATCP and the 2004 Addendum. CARB has also made notable progress in mobile source measures via its Diesel Risk Reduction Plan, especially for goods movement related sources, while the U.S. EPA continued to implement their air toxic programs applicable to stationary sources.

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

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

- Maximum Individual Cancer Risk: greater than 10 in one million (10 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. SCAQMD continues to review health risk assessments submitted. Notification is required from facilities with a significant risk under the AB 2588 program based on their initial approved health risk assessments and will continue on an ongoing basis as additional and subsequent health risk assessments are reviewed and approved.

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

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

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

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

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

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

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

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

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

Multiple Air Toxics Exposure Studies

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

Multiple Air Toxics Exposure Study II (MATES II): At its October 10, 1997 meeting, the SCAQMD Governing Board directed staff to conduct a follow up to the MATES report to quantify the magnitude of population exposure risk from existing sources of selected air toxic contaminants at that time. MATES II included a monitoring program of 40 known air toxic compounds, an updated emissions inventory of 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 SCAQMD Governing Board's 2003-04 Environmental Justice Workplan approved on September 5, 2003. The MATES III report consisted of several elements including a monitoring program, an updated emissions inventory of 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).

HAZARDS 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 1134 is 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 1134, some stationary gas turbines may require the installation of air pollution control equipment such as SCR systems which utilize ammonia. As such, implementation of PAR 1134 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 3-3 summarizes what the codes mean for each hazards category.

In addition to the information in Table 3-3, 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 3-3
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 H&S. 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:

- H&S §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 (H&S 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 H&S 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 SCAQMD 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[9] 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 3-4 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[10].

Table 3-4
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[11,12]

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[13].

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

9 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

10 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

11 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

12 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

13 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 3-5 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[14]. Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

Table 3-5
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 3-5, the number of incidents has reduced over the years.

Hazards Associated with Air Pollution Control

The SCAQMD has evaluated the hazards associated with previous AQMPs, proposed SCAQMD rules, and non-SCAQMD projects where the SCAQMD 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 SCAQMD 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.

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

[14] 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

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 SCAQMD 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 Section 21000 et seq.), and the CEQA Guidelines, as codified in Title 14 California Code of Regulations Section 15000 et seq. Under the CEQA Guidelines, there are approximately 17 environmental categories in which potential adverse impacts from a project are evaluated.

The CEQA Guidelines also indicate that the degree of specificity required in a CEQA document depends on the type of project being proposed. (CEQA Guidelines Section 15146.) The detail of the environmental analysis for certain types of projects cannot be as great as for others. As explained in Chapter 1, the analysis of PAR 1134 indicated that the type of CEQA document appropriate for the proposed project is a SEA.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This document is a SEA to the 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.

PAR 1134 proposes to update emission limits to reflect current BARCT and to provide implementation timeframes for reducing NOx and ammonia emissions for RECLAIM and non-RECLAIM stationary gas turbines that are not subject to Rule 1135 or located at landfills, petroleum refineries, or publicly owned treatment works. PAR 1134 will also help transition RECLAIM facilities to a command-and-control regulatory structure. Stationary gas turbines located at RECLAIM and non-RECLAIM facilities subject to Rule 1134 will be required to meet the applicable NOx concentration limit by January 1, 2024. For PAR 1134, compliance is expected to be achieved through the installation of SCR technology and repowering, replacement, or retrofitting existing stationary gas turbines. The proposed NOx emission reductions are expected to improve overall air quality in the SCAQMD'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 from those sources that install SCR technology or repower, or replace existing stationary gas turbines. As demonstrated in the following analysis, the construction associated with installing new air pollution control equipment, or repowering, or replacing existing stationary gas turbines in order to reduce NOx emissions, is not expected to exceed the SCAQMD's air quality significance thresholds for construction or operation. Further, after construction is completed, the operation of any new SCR systems and repowered or replaced gas turbines 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 demonstrates 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 PAR 1134 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 PAR 1134.

AIR QUALITY IMPACTS

Significance Criteria

The environmental analysis assumes that installation of NOx air pollution control equipment (e.g., dry low NOx for OCS facilities and 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 gas turbines 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 adopting and implementing PAR 1134 are significant, impacts will be evaluated and compared to the following criteria. If impacts exceed any of the significance thresholds in Table 4-1, they will be considered significant. All feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible. PAR 1134 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 SCAQMD 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 PAR 1134 are primarily the installation of SCR technology and the repowering or replacement of existing stationary gas turbines for facilities located in the OCS with new stationary gas turbines with built-in dry low NOx technology; thus, this will be analyzed in this SEA.

To comply with the proposed emission limits of PAR 1134, a facility has the following options: 1) install an SCR system and associated ammonia storage tank; 2) replace their existing stationary gas turbine with a stationary gas turbine that has built-in pre-combustion controls such as dry low NOx technology; 3) replace their existing SCR system; or 4) modify their existing SCR system. However, since modifying the existing SCR system is expected to have less air quality impacts from construction than a replacement of an entire SCR system, the analysis in this SEA applies the most conservative assumptions to represent a "worst-case" scenario therefore it is assumed that facilities that currently do not meet BARCT with existing SCR systems will replace their existing SCR system rather than modifying the existing SCR system to comply with PAR 1134. Additionally, due to the number of affected stationary gas turbines and compliance date of January 1, 2024, the "worst-case" construction analysis is based on a combination of these construction activities overlapping as detailed in Table 4-7.

Table 4-1
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

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

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

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

Revision: March 2015

Project-Specific Air Quality Impacts During 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 existing stationary gas turbine or installing new SCR systems in order to comply with the NOx emission limits in PAR 1134, 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 34 facilities subject to PAR 1134 there are approximately 12 RECLAIM facilities and four non-RECLAIM facilities for a total of 16 facilities that are expected to require modifications to comply with PAR 1134. The remaining facilities contain stationary gas turbines that either currently meet the proposed emission limits or are eligible for exemptions from the emission limits in PAR 1134. Amongst the 16 facilities that will require modifications to comply with PAR 1134, approximately 30 stationary gas turbines would need to be replaced, repowered, or retrofitted with air pollution control equipment in order to comply with the NOx limits in PAR 1134. Of the 30 stationary gas turbines seven are equipped with older, less efficient SCR systems that are not capable of meeting the more stringent NOx emission limits in PAR 1134 and the remaining stationary gas turbines are not equipped with any air pollution control equipment for reducing NOx emissions. The seven facilities operating stationary gas turbines that are already equipped with existing SCR systems will need to increase the amount of ammonia injected and in turn increase their ammonia usage in order to meet the proposed emission limits in PAR 1134. Some of these SCR systems may not be capable of meeting the proposed NOx limits even with the increased ammonia injection. Therefore, it is assumed that all existing SCR systems at the affected facilities will need to be replaced but that the existing ammonia storage tank will be used. For any facility that operates a stationary gas turbine 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 or the existing stationary gas turbine will need to be replaced with a new stationary gas turbine with built-in dry low NOx technology. 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
Install SCR system and associated ammonia tank	17
Replace existing SCR system	7[1]
Replace existing stationary gas turbine with stationary gas turbine with built-in dry low NOx technology	6

[1] Seven stationary gas turbines are equipped with SCR systems. However, these SCR systems may need to be replaced with new SCR systems to meet the proposed NOx emission limits in PAR 1134.

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 or replacement stationary gas turbines with dry low-NOx technology will be installed, which is expected to result in the "worst-case" emissions.

SCR System Installation

Currently, there are 17 stationary gas turbines that are not equipped with SCR technology. If facility owners/operators of these 17 turbines decide to install 17 SCR systems, 17 ammonia storage tanks (e.g., one storage tank for each SCR system) would also need to be installed because SCR systems utilize ammonia 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 two stationary gas turbines 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 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 to each SCR system has been estimated to range between 250 and 10,000 gallons in capacity. As previously discussed, there are also seven existing SCR systems that may not be capable of meeting the proposed NOx emissions limits. As such, it is assumed that these SCR systems will be replaced but the facility will continue to use the existing ammonia tanks. Existing ammonia tanks are up to 12,000 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 existing stationary gas turbine(s) 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 gas turbines 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. Construction was assumed to consist of four phases: 1) demolition; 2) site preparation; 3) paving; and, 4) installing the NOx control equipment along with supporting devices and structures. 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 4-3.

Table 4-3
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	Rubber Tired Dozers	1	3
Demolition	Tractors/Loaders/Backhoes	1	4
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	2
Building Construction	Forklifts	1	6
Building Construction	Generator Sets	1	8
Building Construction	Tractors/Loaders/Backhoes	1	4
Building Construction	Welders	1	4
Paving	Cement and Mortar Mixers	2	6
Paving	Pavers	1	5
Paving	Plate Compactors	1	4
Paving	Rollers	1	4
Paving	Tractors/Loaders/Backhoes	1	4

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 gas turbines, the installation of SCR systems and associated ammonia storage tanks 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 four 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 – 15 days; site preparation – five days; installation of NOx control equipment – 180 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 off-road equipment each day: demolition - 25 trips; site preparation – 10 trips; installation of SCR system and ammonia tank – 68 trips; and paving – 10 trips. In addition, 10 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 SCAQMD permits, construction is expected to begin in year 2020 at the earliest. Further, depending on the facility, construction could span from six months to over 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 four.

Table 4-4 presents the peak daily emissions from construction activities to install one SCR system and one ammonia storage tank at one facility. There are 17 gas turbines located at nine facilities where each gas turbine 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. There are an additional seven stationary gas turbines that may need to replace their existing SCR systems; thus this analysis includes 16 facilities and 24 affected stationary gas turbines. PAR 1134 provides approximately four years (compliance date of January 1, 2024) for facilities to take the necessary actions in order to achieve compliance, e.g., to construct each SCR system and ammonia storage tank at the nine affected facilities or to replace the existing SCR system at the other six affected facilities. With a four-year compliance timeframe, construction at these 16 facilities would likely be staggered because of the lead time needed to complete design and engineering, procure contracts, order equipment, and obtain SCAQMD permits prior to beginning construction. Thus, the analysis assumes that not all nine 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 4-4 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 SCAQMD's air quality significance thresholds for construction. Table 4-7 presents this overlap in peak daily emissions for construction of two SCR systems and two ammonia storage tanks. 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 One SCR System and One Ammonia Storage Tank at One Facility

Peak Daily Construction Emissions	VOC (lb/day)	NOx (lb/day)	COx (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Installation of 1 SCR and 1 ammonia storage tank	1.3	12.9	9.9	0.0	6.1	3.6
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Complete Replacement of Existing Stationary Gas Turbine
In lieu of installing a new SCR system, a facility operator may consider completely replacing their existing stationary gas turbine with a new, more efficient stationary gas turbine equipped with dry low NOx technology that is capable of meeting the applicable NOx emission limit without the need for an SCR system. 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 gas turbine, the following assumptions were made:

- Before dismantling can occur, the existing gas turbine would need to be shut down and allowed to cool. The dismantling and demolition process is estimated to take 20 days and then it would require approximately five days of site preparation, 180 days of building construction, and five days of paving, for a total of 190 days.
- 50 workers would be needed to dismantle the existing stationary gas turbine and install the new stationary gas turbine.
- Equipment needed to replace a stationary gas turbine is presented in Table 4-5.
- The footprint of the existing gas turbine 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 gas turbine replacement will require its own construction crew and equipment. For any facility with multiple gas turbines undergoing replacement, the replacements 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.
- Once the new gas turbine becomes operational, the NOx emissions are expected to be fewer in the new gas turbine relative to the existing gas turbine. Similarly, the fuel efficiency of

the new gas turbine will be improved and is estimated to use eight to 10 percent less fuel than the existing gas turbine.

- 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 4-5
Construction Equipment That May Be Needed to Replace One Stationary Gas Turbine at One Facility

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Cranes	1	3
Demolition	Rubber Tired Dozers	1	4
Demolition	Tractors/Loaders/Backhoes	1	4
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	3
Building Construction	Forklifts	1	6
Building Construction	Generator Sets	1	8
Building Construction	Tractors/Loaders/Backhoes	1	4
Building Construction	Welders	1	4
Paving	Cement and Mortar Mixers	2	6
Paving	Pavers	1	5
Paving	Plate Compactors	1	4
Paving	Rollers	1	4
Paving	Tractors/Loaders/Backhoes	1	4

Construction emissions associated with removing one stationary gas turbine and replacing it with a new 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 stationary gas turbine. Table 4-6 summarizes the peak daily construction emissions from replacing a stationary gas turbine with a new stationary gas turbine.

Table 4-6
Peak Daily Construction Emissions from Replacing One Stationary Gas Turbine

Construction Emissions	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day	PM10 (lb/day)	PM2.5 (lb/day)
Replacement of 1 Stationary Gas Turbine	1.4	12.9	10.1	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 4-6, the construction emissions from the replacement of one stationary gas turbine on a peak day are less than SCAQMD's air quality significance thresholds for construction.

The existing six stationary turbines located in the OCS will likely replace some of their existing stationary gas turbines with new stationary gas turbines with dry low NOx technology or other NOx reduction control technology to comply with PAR 1134. 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 gas turbines being offline at the same time.

There may be other facilities that will elect to replace their existing gas turbine(s), but SCAQMD staff is unable to predict if there are additional facilities that would choose replacement since there are a variety of factors to be considered. One factor is the useful life of the equipment since an average stationary gas turbine is estimated to have a useful life of 25 to 30 years. Some facility operators may decide to replace an old gas turbine with a new gas turbine to improve operational efficiency or if the existing gas turbine cannot be retrofitted with a new SCR system. Overall, the decision to replace an existing gas turbine will depend upon cost, the feasibility to install a new SCR system and achieve the NOx emission limits in PAR 1134, 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 gas turbine and install an SCR system and ammonia storage tank and the length of time provided to comply with the requirements of PAR 1134 (on or before January 1, 2024, approximately four years to achieve compliance), the construction phases for multiple facilities could potentially overlap on a peak day. A peak day is expected to consist of two SCR systems and associated ammonia storage tank installations and one stationary gas turbine replacement. Overlapping peak daily construction emissions are shown in Table 4-7.

Table 4-7
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 Two SCR Systems and Two Ammonia Storage Tanks	2.6	25.8	17.3	0.03	12.2	7.1
Replacement of 1 Stationary Gas Turbine	1.3	12.9	8.9	0.02	6.1	3.6
Total Overlapping Construction Emissions	4.0	38.7	26.2	0.05	18.3	10.7
Significance Threshold for Construction	75	100	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

As shown in Table 4-7, the air quality impacts due to construction from the implementation of PAR 1134 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 2.8 tons per day of NOx emissions by January 1, 2024. Implementation is expected to be achieved through any of the following modifications: 1) install one new SCR system for one existing stationary gas turbine that does not have post-combustion air pollution control equipment; 2) replace one existing stationary gas turbine with one new stationary gas turbine equipped with dry low-NOx technology; or 3) replace one existing SCR system and increase the amount of ammonia injection. 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 storage tank is assumed to require two one-way truck deliveries of 19 percent aqueous ammonia. Ammonia delivery trucks can deliver approximately 6,400 gallons at any one time.
- Each facility with only one new SCR system installed will need only one new ammonia delivery trip per month, but the quantity delivered will vary according to the capacity of the ammonia storage tank. For facilities that will have more than one SCR system installed, the analysis assumes that one new large ammonia storage tank will require two one-way truck deliveries of 19 percent aqueous ammonia. . 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 every two to 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.
- Nine facilities are expected to install new SCR systems with new ammonia deliveries with eight of the aforementioned facilities located within one quarter mile of sensitive receptors (e.g., schools, residences, etc.).

- Six facilities with existing SCR systems are expected to increase their ammonia usage with two of the aforementioned facilities located within one quarter mile of sensitive receptors (e.g., schools, residences, etc.).
- 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 16 facilities will need new ammonia deliveries. Of the 16 facilities with SCR systems, seven 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 4-8. 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 4-8
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 4-8, operational emissions from one facility as a result in an increase in delivery trucks is below the SCAQMD's air quality significance thresholds for operation. Due to the number of affected facilities with increased ammonia deliveries (17), operational emissions may overlap on a peak day. However, in the most conservative assumption, if four facilities were to overlap their scheduled ammonia delivery and one facility with new SCR catalyst delivery, air quality impacts from operations are expected to be less than significant as shown in Table 4-9.

Table 4-9
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 4 Facilities	0.31	2.08	1.35	0.01	0.14	0.08
New Catalyst Delivery and Spent Catalyst Haul Trip at 1 Facility	0.15	1.04	0.68	0.00	0.07	0.04
TOTAL	**0.46**	**3.11**	**2.03**	**0.01**	**0.21**	**0.12**
Significance Threshold for Operation	55	55	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

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 1134, 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 1134 until January 1, 2024, at which all affected stationary gas turbines are required to meet the NOx emission limits set forth in PAR 1134. The peak daily emissions during this overlap period are assumed to occur when two new SCR systems and associated ammonia storage tanks are being installed (see Table 4-4) and one existing stationary gas turbine is being replaced (see Table 4-6 for one stationary gas turbine installation). Peak operational emissions are assumed to occur when four facilities receive ammonia deliveries and one facility receives new SCR catalyst and hauls off spent catalyst (see Table 4-9). According to SCAQMD 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 SCAQMD'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 4-10.

Table 4-10
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 2 new SCR Systems and 2 new ammonia storage tanks (construction)	3.9	38.7	29.6	0.1	18.2	10.7
Replacement of 1 Stationary Gas Turbine (construction)	1.4	12.9	10.1	0.0	6.1	3.6
Increased Truck Trips for ammonia delivery for 4 facilities (operation)	0.31	2.08	1.35	0.01	0.14	0.08
Increased Truck Trips for New Catalyst Delivery and Hauling Spent Catalyst at 1 Facility	0.15	1.04	0.68	0.00	0.07	0.04
TOTAL	4.42	41.81	28.19	0.06	18.44	10.82
Significance Threshold for Operation	55	55	550	150	150	55
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

As indicated in Table 4-10, the peak daily emissions during the construction and operational overlap period do not exceed any of the SCAQMD'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 limited to five ppm through permit conditions for new SCR installations. Based on the November 2015 Final Program Environmental Analysis for Proposed Amended Regulation XX - RECLAIM[15] 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 microgram (µg) per cubic meter) and acute (3,200 µg per cubic meter) reference exposure levels (RELs). Table 4-11 summarizes the calculated non-carcinogenic chronic and acute hazard indices for ammonia and compared these values to the respective significance thresholds; both were shown to be less than significant.

[15] SCAQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX -RECLAIM, November 2015. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf

Table 4-11
Health Risk from the Facilities Using Ammonia

Ammonia Slip Concentration at the Exit of the Stack (ppm)	**Peak Concentration at a Receptor 25 m from the Stack** (μg/m3)	**Acute REL** (μg/m3)	**Chronic REL** (μg/m3)	**Acute Hazard Index**	**Chronic Hazard Index**
5[1]	35	3,200	200	**0.01**	**0.17**
			Significance Threshold	**1.0**	**1.0**
			Exceed Significance?	**NO**	**NO**

[1]Some facilities have stationary gas turbines that may qualify for exemptions provided they meet applicable specified criteria in PAR 1134. Of those stationary gas turbines that may be exempt, some would have an ammonia limit not to exceed 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 would likely be routed to one stack which would still be limited to five ppm ammonia slip. As such, 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 a SCR system, the ammonia 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 SCAQMD through permit conditions limits ammonia slip to five ppm. In the November 2015 Final Program EA for NOx RECLAIM[16], SCAQMD 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 tons 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 μg per cubic meter. 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 μg per cubic meter. Thus, increasing the amount of ammonia slip would result in a net average 0.1 μg per cubic meter 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 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

[16] SCAQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX -RECLAIM, November 2015. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf

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 1134 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 stationary gas turbines. 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 SCAQMD 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 1134 contains an ammonia slip limit of five ppm to prevent the over-injection of excess ammonia. Because the exhaust gases from the gas turbines 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 stationary gas turbines are expected to be the same size as the existing stationary gas turbines and therefore to cause any additional odors. Furthermore, since the replacement stationary gas turbines are newer and more gas efficient, there is potentially less odors due to a decrease in fuel usage. [please add a sentence or two here explaining why the odor profile of replaced gas turbines may improve or at the very least remain unchanged since the newer more efficient gas turbines use less fuel when compared to their older counterparts.]

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[17].

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 SCAQMD'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 SCAQMD 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 SCAQMD adopted an interim CEQA GHG Significance Threshold for projects where SCAQMD is the lead agency (SCAQMD, 2008). This interim threshold is set at 10,000 metric tons of CO2 equivalent emissions (MTCO2eq) per year. The SCAQMD prepared a "Draft Guidance Document – Interim CEQA GHG Significance Thresholds" that outlined the approved tiered approach to determine GHG significance of projects (SCAQMD, 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 SCAQMD is the lead agency (SCAQMD, 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. CO2 emissions were estimated from CalEEMod for the SCR systems and stationary gas turbines equipped with dry low NOx technology.

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

[17] 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

emissions produced from additional truck hauling and deliveries necessary to accommodate the additional solid waste generation and increased use of chemicals and supplies.

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 (January 1, 2024). 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 2.8 tons per day of the NOx emission reduction, such that any installed or modified NOx controls could be constructed and operational by December 31, 2023. Thus, once construction is complete and the equipment is operational, CO2e emissions will remain constant.

Approximately 17 new SCR systems and associated ammonia storage tanks, seven SCR system replacements, and six stationary gas turbine replacements are expected to be constructed as a result of the implementation of PAR 1134. Also, 16 facilities will need new or additional ammonia deliveries. Only one of the facilities is expected to need two additional deliveries per month while the remaining facilities will need one delivery per month for a total of 204 ammonia deliveries per year. Additionally, SCR catalysts will need to be replaced. For GHG emission estimates, it is conservatively assumed that 16 additional catalyst deliveries will occur per year for the 16 new SCR systems and 16 truck trips to remove spent catalyst. The total increased truck trips per year is therefore 236 truck trips. GHG Emissions from construction activities were estimated using CalEEMod v.2016.3.2 and GHG emissions from operational activities were estimated based on EMFAC2017 factors for heavy duty trucks. Appendix B contains CalEEMod files for construction emissions and Appendix C contains detailed calculations for operational emissions. As summarized in Table 4-12, implementation of PAR 1134 may result in the generation of 145 amortized metric tons of CO2e emissions during construction and 21 metric tons of CO2e emissions from mobile sources during operation from all the affected facilities.

Table 4-12
GHG Emissions from the Proposed Project

Activity	**CO2** (MT/year[a])
Construction[b] – 17 SCR systems and associated ammonia storage tanks, 7 SCR System replacements, 6 Stationary Gas Turbines installed in one year	145
Operation – On-road vehicles	21
Total GHG	166
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 4-12, GHG emissions from the installation of new SCR systems, and the replacement of SCR catalyst modules and existing stationary gas turbines 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[18] that was adopted by the SCAQMD Governing Board in December 2008.

Thus, as shown in Table 4-12, total GHG emissions are 166 metric tons per year, which is below the SCAQMD'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 1134 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.

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 propose 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 42 pounds of NOx per day as indicated in Table 4-10, however the proposed project is expected to result in NOx emission reductions of 2.8 tons per day (5,600 pounds per day) after implementation of BARCT limits. Further, as facilities complete modifications to their existing stationary gas turbines to comply with PAR 1134, the incremental

[18] 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?sfvrsn=2

NOx emissions reductions that are expected to occur would offset the NOx emissions generated during construction.

Also, implementing control measure CMB-05 contained in the 2016 AQMP, in addition to the air quality benefits of existing and proposed SCAQMD rules, is anticipated to bring the SCAQMD 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 SCAQMD's GHG significance threshold. In addition, implementing the proposed project is expected to generate less than significant adverse cumulative GHG air quality impacts. The GHG analysis for the proposed project can be found in Chapter 4.

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 SCAQMD 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, SCAQMD 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.

Ten facilities 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 SCAQMD rules and regulations and installation of associated ammonia storage tanks) where the SCAQMD 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 6,400 gallons. The estimated ammonia use and storage needed to meet the NOx emission limits for PAR 1134 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 5,000-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 1134 would actually result in fewer deliveries of ammonia on any given day resulting in less impacts than Scenario 1 and a smaller volume of ammonia resulting in less 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 1134 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, SCAQMD 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 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 4-14. 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 4-13
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: Environmental Protection Agency, 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 7,000 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; SCAQMD, 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 degrees Fahrenheit (°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 EPA RMP*Comp (Version 1.07) is typically performed. SCAQMD staff estimated that the largest aqueous ammonia tank that would be installed as a result of implementing PAR 1134 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. Nine facilities were assumed to install one new SCR system and one new ammonia storage tank each. Of these nine facilities, eight are located within one-quarter mile of sensitive receptors. As summarized in Table 4-14, one facility would require the installation of four new SCR systems, five facilities would require the installation of two new SCR systems at each facility, and the remainder 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 4-14
Number of New SCR Systems and Affected Facilities

	Number of SCR Systems to be Installed at Each Facility	Number of Affected Facilities
	4	1
	2	5
	1	3
Total	**17**	**9**

Although it is SCAQMD 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 SCAQMD 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% of its capacity at any one time which in this case is 3,350 gallons of aqueous ammonia. Facility A is expected to need one 5,000 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 larger than 5,000 gallons; 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. Eight 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, SCAQMD 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 SCAQMD permits to construct for the facility-specific project. These mitigation measures will be enforceable by SCAQMD 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 the extent that no hazards impact is possible 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 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 PAR 1134. 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 42 pounds of NOx per day as indicated in Table 4-10, however the proposed project is expected to result in NOx emission reductions of 2.8 tons per day (5,600 pounds per day) after implementation of BARCT limits. Further, as facilities complete modifications to their existing stationary gas turbines to comply with PAR 1134, the incremental NOx emissions 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 or replacement SCR systems and replacement stationary gas turbines with dry low NOx technology would need to be constructed and ammonia usage would need to be increased. Further, no exceedances of the SCAQMD'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 District 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 gas turbines with new air pollution control equipment (e.g. SCR technology/systems installation), modify existing SCR systems, or repower or replace existing stationary gas turbines, emissions from construction are expected to occur. However, as RECLAIM facilities transition their existing stationary gas turbines 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 due to the project's overall NOx emission reductions. 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 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 Section15064 (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, PAR 1134. Table 4-16 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 4-15
Applicability of Significant Impacts in March 2017 Final Program EIR to Proposed Project

CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR	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 1134 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	No	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 4-18 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 1134 would be less than significant.
Hazards and hazardous materials due the increased flammability of solvents	No	Stationary gas turbines 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. 4-19 to 4-27). 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	Stationary gas turbines and the corresponding NOx emission controls (e.g. SCRs) do not utilize LNG for their operation. Therefore, this conclusion is not applicable to the proposed project.
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. 4-19 to 4-27).

Table 4-15
Applicability of Significant Impacts in March 2017 Final Program EIR to Proposed Project (concluded)

CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR	APPLICABLE TO/SIGNIFICANT FOR THE PROPOSED PROJECT?	EXPLANATION
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.

PAR 1134 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 PAR 1134 no other environmental topic areas have been evaluated in this SEA. Thus, the conclusions reached in this Revised 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 topics air quality during construction and 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 SCAQMD's jurisdiction because it is not expected to foster economic or population growth or the construction of additional housing and primarily affects existing facilities.

RELATIONSHIP BETWEEN SHORT-TERM 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 1134 will transition stationary gas turbines at RECLAIM facilities to a command-and-control regulatory structure. The primary objective of this project is to ensure RECLAIM and non-RECLAIM stationary gas turbines that are not subject to SCAQMD Rule 1135 or located at petroleum refineries, landfills, or publicly owned treatment works meet NOx emission limits and BARCT level equivalency. PAR 1134 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 emissions 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. SCAQMD Rule 110 (the rule which implements the SCAQMD's certified regulatory program) does not impose any greater requirements for a discussion of project alternatives in a SEA than is required for an EIR under CEQA.

METHODOLOGY FOR DEVELOPING PROJECT ALTERNATIVES

The alternatives typically included in CEQA documents for proposed SCAQMD 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 Rule 1134, only the components that pertain to complying with the NOx emission limits 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.

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 version of Rule 1134.

DESCRIPTION OF ALTERNATIVES

The evaluation of the components that comprise PAR 1134 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 EPA RMP*Comp (see Appendix D - List of Affected Facilities and see 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).

The evaluation also indicates that implementation of PAR 1134 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 – Earlier Compliance Date, and Alternative C – Phased Compliance Dates. The primary components of the proposed alternatives that have been modified are the manner and timing in which compliance with the NOx emission limits may be achieved. 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 description of the alternatives.

Proposed Project

PAR 1134 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 and non-RECLAIM stationary gas turbines that are not subject to Rule 1135 or located at petroleum refineries, landfills, or publicly owned treatment works. The main objectives of PAR 1134 are to: 1) reduce NOx emissions from stationary gas turbines 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 updating the NOx limits and incorporating new ammonia (NH3) emission limits to reflect current BARCT. PAR 1134 would:

1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with BARCT; 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 - MRR Requirements for NOx and SOx Sources, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 6) revise existing exemptions to remove obsolete provisions. PAR 1134 implements control measure CMB-05 from the 2016 Final AQMP. Affected equipment would have until December 31, 2023 (four years) to comply with PAR 1134.

Alternative A: No Project (Current Rule)

Alternative A, the no project alternative, means that the current version of Rule 1134 that was amended in August 1997, would remain in effect and there would be no transition out of the NOx RECLAIM program. Under the current version of Rule 1134, stationary gas turbines at RECLAIM facilities would not have to comply with the NOx emission limits in set forth in Rule 1134. Under this 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: Earlier Compliance Date 12/31/2022

Under Alternative B, the requirements would be equivalent to the proposed project but the compliance date for meeting the NOx and ammonia emission limits would one year earlier, December 31, 2022, which would allow three years to comply with PAR 1134. The earlier compliance date under Alternative B is more stringent than the proposed project.

Alternative C: Phased Compliance Dates

Under Alternative C, the requirements would be equivalent to the proposed project, but the compliance dates for meeting the NOx and ammonia emission limits would vary depending on fuel type, as follows: 1) Liquid Fuel – Outer Continental Shelf: December 31, 2023, 2) Natural Gas – Combined Cycle: June 30, 2023; 3) Natural Gas – Pipeline Gas Turbine: December 31, 2023; 4) Natural Gas – Simple Cycle: December 31, 2022; 5) Produced Gas: December 31, 2023; 6) Produced Gas – Outer Continental Shelf: December 31, 2023; and 7) Other: December 31, 2023. The earlier compliance dates for the Natural Gas – Combined Cycle and Natural Gas – Simple Cycle categories under Alternative C are more stringent than the proposed project but less stringent than Alternative B for the Natural Gas – Combined Cycle category.

Table 5 - 1
Summary of the Proposed Project Alternatives

PROPOSED PROJECT Compliance Date 12/31/2023[1]			ALTERNATIVE A No Project[4, 5]		ALTERNATIVE B Earlier Compliance Date 12/31/2022		ALTERNATIVE C Phased Compliance Dates[6]
Fuel Type	**NOx Limit (ppmv)**	**Ammonia Limit (ppmv)**	**NOx Limit (ppmv)**	**Ammonia Limit (ppmv)**	**NOx Limit (ppmv)**	**Ammonia Limit (ppmv)**	**Phased compliance dates with equivalent NOx & Ammonia limits to the Proposed Project**
Liquid Fuel – Outer Continental Shelf[2]	30	5	--	--	30	5	Compliance Date: December 31, 2023
Natural Gas – Combined Cycle	2	5	--	--	2	5	Compliance Date: June 30, 2023
Natural Gas – Pipeline Gas Turbine	8	5	--	--	8	5	Compliance Date: December 31, 2023
Natural Gas – Simple Cycle	2.5	5	--	--	2.5	5	Compliance Date: December 31, 2022
Produced Gas	5	5	--	--	5	5	Compliance Date: December 31, 2023
Produced Gas – Outer Continental Shelf[3]	15	5	--	--	15	5	Compliance Date: December 31, 2023
Other	12.5	5	--	--	12.5	5	Compliance Date: December 31, 2023

1 PAR 1134 applies to all stationary gas turbines located at non-RECLAIM and RECLAIM facilities (excluding those subject to Rule 1135 or those located at a petroleum refinery, landfills, or publically owned treatment works), regardless of the date they were permitted.

2, 3 Stationary gas turbines located in the outer continental shelf (defined in Title 40 CFR Part 55 – Outer Continental Shelf Air Regulations) are off-shore facilities and are not accessible via on-road vehicles.

4 For Alternative A, RECLAIM facilities will continue to comply with their annual facility-wide NOx allocations; there are no specific NOx Limits applicable to stationary gas turbines.

5 For Alternative A, non-RECLAIM facilities: The August 1997 version of Rule 1134 and the following NOx limits will remain in effect: gas turbines without SCR have a NOx limit that ranges between 12 and 25 ppmv and gas turbines with SCR have a NOx limit of nine ppmv.

6 Phased compliance dates are based on the total NOx inventory for turbines subject to PAR 1134 with earlier compliance dates for equipment with larger NOx emission inventories.

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 meeting 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 Earlier Compliance Date 12/31/2022	ALTERNATIVE C Phased Compliance Dates
Air Quality	Expected to result in NOx emission reductions of 2.8 tons per day. Stationary gas turbines at affected RECLAIM facilities will transition to a command-and-control regulatory structure. The affected stationary gas turbines are expected to be retrofitted with SCR technology, or repowered or replaced. Stationary gas turbines operated at non-RECLAIM facilities are expected to be retrofitted with SCR technology, or repowered, or replaced. Upon project implementation, all stationary gas turbines 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 stationary gas turbines will not be retrofitted with air pollution control equipment, repowered, or replaced. Non-RECLAIM stationary gas turbines will continue to meet the existing NOx limits in the current version of Rule 1134.	Expected to result in NOx emission reductions of 2.8 tons per day, which is equivalent to the proposed project but achieved one year earlier than the proposed project. Upon project implementation, all stationary gas turbines at RECLAIM and non-RECLAIM facilities will achieve BARCT equivalency for NOx.	Expected to result in equivalent NOx emission reductions of 2.8 tons per day, which is equivalent to the proposed project; the quantity of emission reductions will occur incrementally due to the phased compliance dates. A portion of the overall NOx emission reductions will be achieved one year earlier (e.g., by 12/31/2022) for simple cycle gas turbines equipped either with or without SCR technology. The remaining stationary gas turbines will achieve the remaining portion of the overall NOx emission reductions by 12/31/23. Upon project implementation, all stationary gas turbines at RECLAIM and non-RECLAIM facilities will achieve BARCT equivalency for NOx.

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Earlier Compliance Date 12/31/2022	ALTERNATIVE C Phased Compliance Dates
Significance of Air Quality Impacts	**Less than Significant:** No exceedances of the SCAQMD'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 gas turbines with air pollution control equipment (e.g., SCR technology/systems installation), or repower or replace existing stationary gas turbines, emissions from construction are expected to occur. As facilities transition their existing stationary gas turbines 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 due to the project's overall NOx emission reductions.	**Not Significant:** Alternative A would not result in an exceedance of any SCAQMD 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 SCAQMD will not achieve any emissions reductions of NOx (a pre-cursor to the formation of ozone); thus, attainment for the SCAQMD for ozone is unlikely to occur.	**Significant:** Due to having an earlier compliance date when compared to the proposed project, 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. As such, an exceedance of the SCAQMD'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 gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-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 having earlier compliance dates for gas turbines equipped with and without SCRs, the construction schedules of the affected facilities under Alternative C would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day. As such, exceedances of the SCAQMD'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 gas turbines stationary gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-year compliance period for gas turbines equipped with and without SCRs and over the 4-year compliance period for the remaining gas turbines, 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.

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent Compliance Deadline	ALTERNATIVE C Phased Compliance Deadline
Hazards and Hazardous Materials	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 a new ammonia storage tank will be needed at each facility that installs SCR equipment. 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 stationary gas turbines will be retrofitted with SCR technology. Thus, no new ammonia storage tanks will be needed.	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 a new ammonia storage tank will be needed at each facility that installs SCR equipment. 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 a new ammonia storage tank will be needed at each facility that installs SCR equipment. Ammonia is considered to be a hazardous material.
Significance of Hazards and Hazardous Materials Impacts	**Significant:** Based on the analysis, using 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 hazards or hazardous materials impacts would occur.	**Significant:** Based on the analysis, using 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 B would be equivalent to the proposed project.	**Significant:** Based on the analysis, using 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 C 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 SCAQMD 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 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 SCAQMD's policy document Environmental Justice Program Enhancements for FY 2002-03, Enhancement II-1 recommends for all SCAQMD 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) used in the control equipment. 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 gas turbines, 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 used 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 and C, it is assumed that SCR technology may be used control NOx, since PAR 1134 neither prescribes the method for controlling NOx emissions nor requires replacement of the existing stationary gas turbines 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, no new NOx and ammonia emission limits would be imposed on stationary gas turbines, 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, PAR 1134 would not be adopted, the proposed project's objectives would not be achieved such that no NOx emissions reductions and the corresponding health benefits would not occur. If Alternative A is implemented, the quantity of NOx emissions currently generated by the affected stationary gas turbines (the baseline) will remain unchanged. Currently, the Basin is in non-attainment for ozone and cannot achieve attainment unless NOx emissions reductions occur. In addition, implementing Alternative A means that RECLAIM facilities with stationary gas turbines would not transition to a command-and-control regulatory structure or some stationary gas turbines would not achieve BARCT level equivalency. Units at non-RECLAIM facilities would also not meet BARCT level equivalency. 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, the compliance date would be reduced by one year when compared to the proposed project. The same quantity of NOx emissions reductions (e.g., 2.8 tons per day) would be achieved as the proposed project; however, the timing of when the NOx emission reductions would be achieved will occur one year earlier (e.g., by December 31, 2022 instead of December 31, 2023). While Alternative B will accelerate the operational benefits from the NOx emission reductions, the timing of the construction activities will also be accelerated and compressed over a three-year compliance period. While the number of affected facilities would be the same as the proposed project, these facilities would be required to retrofit, repower, or replace their equipment to comply with BARCT in a shorter timeframe (one year earlier). The air quality impacts due to the physical modifications expected to take place at the affected facilities would be expected to exceed the SCAQMD'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 emission reductions, the application of an earlier compliance date for all stationary gas turbines would result in construction occurring over a shorter, compressed time frame than the proposed project and thus, 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, once the SCR systems are installed and operational, the hazards and hazardous materials impacts would be the same as the proposed project. 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.

If Alternative C is implemented, the compliance dates for meeting the NOx and ammonia emission limits would vary depending on fuel type, as follows: 1) Liquid Fuel – Outer Continental Shelf: December 31, 2023, 2) Natural Gas – Combined Cycle: June 30, 2023 ; 3) Natural Gas – Pipeline Gas Turbine: December 31, 2023; 4) Natural Gas – Simple Cycle: December 31, 2022 ; 5) Produced Gas: December 31, 2023; 6) Produced Gas – Outer Continental Shelf: December 31, 2023; and 7) Other: December 31, 2023. While the same quantity of NOx emissions reductions would be achieved under Alternative C as the proposed project (e.g., 2.8 tons per day), a portion of these NOx emission reductions would be achieved six months earlier for the Natural Gas – Combined Cycle category (by June 30, 2013 instead of December 31, 2023) and one year earlier for the Natural Gas – Simple Cycle category (by December 31, 2022 instead of December 31, 2023). This acceleration of the operational benefits under Alternative C will also mean that the timing of the construction activities associated with these fuel type categories will also be accelerated and compressed over a 3.5-year period for the Natural Gas – Combined Cycle category and over a three-year period for the Natural Gas – Simple Cycle category. While the number of affected facilities would be the same as the proposed project, these facilities would be required to retrofit, repower, or replace their equipment to comply with BARCT in a shorter timeframe (from six months to one year earlier for the Natural Gas – Combined Cycle and the Natural Gas – Simple Cycle categories, respectively). The air quality impacts due to the physical modifications expected to take place at the affected facilities would be expected to exceed the SCAQMD'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, the application of earlier compliance dates for natural gas-fueled simple and combined cycle stationary gas turbines would result in construction occurring over a shorter, compressed time frame than the proposed project and thus, the operational benefit from achieving earlier NOx emission reductions from these categories may not fully reduce the concurrent, temporary increases in NOx emissions occurring during construction to less than significant levels. Under Alternative C, once the SCR systems are installed and operational, the hazards and hazardous materials impacts would be the same as 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, though less than those that may be generated under Alternative B in addition to the significant adverse hazards and hazardous materials due to ammonia storage and use during operation.

In summary, of the three alternatives, Alternative C 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 equivalent to the hazards and hazardous materials impacts 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. Further, 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 PAR 1134.

APPENDICES

Appendix A: Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

Appendix B: CalEEMod Files and Assumptions

Appendix C: CEQA Impact Evaluations – Assumptions and Calculations

Appendix D: PAR 1134 List of Affected Facilities

Appendix E: Hazards Analysis

APPENDIX A

Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

(Adopted August 4, 1989)(Amended December 7, 1995)
(Amended April 11, 1997)(Amended August 8, 1997)

PAR 1134 v120618

PROPOSED AMENDED RULE 1134. EMISSIONS OF OXIDES OF NITROGEN FROM STATIONARY GAS TURBINES

(a) Purpose

The purpose of this rule is to reduce emissions of oxides of nitrogen (NO_x) from stationary gas turbines.

(b) Applicability

The provisions of this rule shall apply to all ~~existing~~ stationary gas turbines, 0.3 megawatt (MW) and larger~~, as of August 4, 1989~~. The rule does not apply to stationary gas turbines subject to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities or located at petroleum refineries, landfills, or publicly owned treatment works.

(~~b~~c) Definitions

(1) ANNUAL CAPACITY FACTOR is the ratio between the measured heat input (in MMBTU) from fuel consumption to a stationary gas turbine during a calendar year and the potential heat input (in MMBTU) to the stationary gas turbine had it been operated for 8,760 hours during a calendar year at the permitted heat input rating, expressed as a percent.

~~CHEMICAL PROCESSING GAS TURBINE UNIT is a gas turbine unit that vents its exhaust gases into the operating stream of a chemical process.~~

(2) COGENERATION ~~CYCLE~~ GAS TURBINE ~~UNIT~~ is a gas turbine ~~that operates both for the simultaneous production of shaft work and for the recovery of useful thermal energy from the exhaust gases or waste steam as defined by Section 25134 of the California Public Resources Code~~ which is designed to generate electricity and useful heat energy at the same time (combined heat and power).

(3) COMBINED CYCLE GAS TURBINE ~~UNIT~~ is a gas turbine ~~unit~~ that ~~operates both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases~~ recovers heat from the gas turbine exhaust gases for use in a heat recovery steam generator to generate additional electricity.

(4) DUCT BURNER is a device located in the heat recovery steam generator of a gas turbine that combusts fuel and adds heat energy to the turbine exhaust to increase the output of the heat recovery steam generator.

(~~4~~5) EMERGENCY STANDBY GAS TURBINE ~~UNIT~~ is a gas turbine ~~unit~~ that operates only as a ~~mechanical or electrical~~ power source for a facility when the primary power source has been rendered inoperable, except due to power interruption pursuant to an interruptible power supply agreement. ~~This does not include utility company electrical power plant units.~~

~~(5) EMISSION CONTROL PLAN is a plan that shall contain at a minimum District permit or identification number; name of gas turbine manufacturer; model designation; rated brake horsepower; heat rate (BTU/KW-HR), corrected to the HHV for each type of fueling (liquid/gas); type of liquid fuel and/or type of gaseous fuel; hours of operation in the previous one-year period; fuel consumption (cubic feet of gas or gallons of liquid) for the previous one-year period; and a list of all gas turbine units required to be controlled identifying the type of emission control to be applied to such gas turbine units along with documentation showing existing emissions of~~ ~~NO_x~~ ~~and CO.~~

(6) EXHAUST AFTER-TREATMENT ~~means~~ is a control method for the post-combustion reduction of NO_x emissions, such as selective catalytic reduction (SCR).

(7) EXISTING GAS TURBINE ~~UNIT~~ is a stationary gas turbine ~~unit~~ that was a non-RECLAIM NO_x source and met the following criteria prior to August 4, 1989:

(A) Had been issued a valid permit to construct or operate by the ~~District~~SCAQMD, or

(B) Was in operation pursuant to the provisions of ~~District~~ SCAQMD Rule 219(b)(1).

(8) FORMER RECLAIM FACILTY is a facility, or any of its successors, that was in the Regional Clean Air Incentives Market (RECLAIM) 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.

~~(8) HHV - HIGHER HEATING VALUE OF FUEL.~~

(9) LANDFILL is an entire disposal facility in a contiguous geographical space where solid waste is placed in or on land. A landfill may be active, inactive, or closed.

~~(9) LHV - LOWER HEATING VALUE OF FUEL.~~

~~(10) PEAKING GAS TURBINE UNIT is a gas turbine unit that is used intermittently to produce energy on a demand basis.~~

(10) NATURAL GAS is a mixture of gaseous hydrocarbons, with at least 80 percent methane (by volume), and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the California Public Utilities Commission.

(11) NON-RECLAIM NO_x FACILITY is 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) OUTER CONTINENTAL SHELF is as defined in 40 CFR, Part 55 – Outer Continental Shelf Air Regulations.

(13) OXIDES OF NITROGEN (NO_x) EMISSIONS is the sum of nitric oxides and nitrogen dioxides emitted, collectively expressed as nitrogen dioxide emissions.

(14) PETROLEUM REFINERY is a facility identified by the North American Industry Classification System Code 324110, Petroleum Refineries.

(~~11~~15) PIPELINE GAS TURBINE ~~UNIT~~ is a stationary gas turbine ~~unit~~ used to transport gases or liquids in a pipeline.

(~~12~~16) POWER AUGMENTATION is the increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

(17) PRODUCED GAS is made up of organic compounds that are gaseous at standard temperature and pressure and are associated with the production, gathering, separation, or processing of crude oil.

(18) PUBLICLY OWNED TREATMENT WORKS are wastewater treatment or reclamation plants owned and operated by a public entity, including all operations within the boundaries of the wastewater and sludge treatment plant.

(~~13~~19) RATING OF A GAS TURBINE ~~UNIT~~ is the continuous MW (megawatt) rating or mechanical equivalent by a manufacturer for a gas turbine ~~unit(s)~~ without power augmentation.

(20) RECLAIM NO_x SOURCE for the purpose of this rule is a stationary gas turbine located at a facility or its successor that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX and is still in RECLAIM on the relevant date.

~~(14) SEWAGE DIGESTER GAS is any gas derived from anaerobic decomposition of organic sewage.~~

(21) SHUTDOWN is the time period that begins when a stationary gas turbine reduces load and which ends in a period of zero fuel flow, or as otherwise defined in the SCAQMD permit to operate.

(~~18~~22) SIMPLE CYCLE GAS TURBINE is any stationary combustion turbine that does not recover heat from the combustion turbine exhaust gases to heat water or generate steam

(23) START-UP is the time period that begins when a stationary gas turbine begins combusting fuel after a period of zero fuel flow and ends when the stationary gas turbine generates electricity for sale or for any other purpose including on-site use, or as otherwise defined in the SCAQMD permit to operate.

~~(15) SOUTHEAST DESERT AIR BASIN (SEDAB) means the portion of the air basin containing specific desert portions of Los Angeles, Riverside and San Bernardino counties, as defined in Title 17, California Code of Regulations, Section 60109, within the jurisdiction of the District.~~

(~~16~~24) STATIONARY GAS TURBINE ~~UNIT~~ is any gas turbine ~~unit~~ that is gas and/or liquid fueled with or without power augmentation. This gas turbine ~~unit~~ is either attached to a foundation at a facility or is portable equipment ~~operated at a specific facility for more than 90 days in any 12-month period~~that will reside at the same location for more than 12 consecutive months. Two or more gas turbines ~~units~~ powering one shaft shall be treated as one gas turbine ~~unit~~.

(~~17~~25) THERMAL STABILIZATION PERIOD is the two-hour start up time necessary for NO_x control purposes in cogeneration cycle, combined cycle, or any other applicable stationary gas turbines ~~units~~.

(26) TUNING is adjusting, optimizing, rebalancing, or other similar operations to a stationary gas turbine or an associated control device or otherwise as defined in the SCAQMD permit to operate. Tuning does not include normal operations to meet load fluctuations.

(~~c~~d) Emissions Limitations

(1) Until December 31, 2023, or until the existing gas turbine operates in compliance with subparagraph (d)(3), ~~The~~ the owner or operator of any existing ~~stationary~~ gas turbine ~~unit~~ shall not operate such unit under load

conditions, excluding the thermal stabilization period or other time period specified in the Permit to Construct or the Permit to Operate issued prior to August 4, 1989, which result in the discharge of oxides of nitrogen (NO_x) emissions, directly or indirectly, into the atmosphere at concentrations in excess of the following as measured pursuant to subdivision (e):

$$\text{Compliance Limit} = \text{Reference Limit} \times \frac{EFF}{25\%}$$

Where:

Compliance Limit = allowable NO_x emissions (ppm by volume).

Reference Limit = the NO_x emission limit (ppm by volume) is corrected to 15 percent oxygen on a dry basis, and averaged over 15 consecutive minutes. These limits for various megawatt ratings (continuous rating by the manufacturer without power augmentation) are as follows:

REFERENCE NO_x LIMITS, PPM

~~Unit~~ Stationary Gas Turbine Size Megawatt (MW) Rating	Effective 12-31-95
0.3 to Less Than 2.9 MW	25
2.9 to Less Than 10.0 MW	9
2.9 to Less Than 10.0 MW No SCR	15
10.0 MW and Over	9
10.0 MW and Over No SCR	12
60 MW and Over Combined Cycle No SCR	15
60 MW and Over Combined Cycle	9
	Effective 4/11/97
2.9 to Less Than 10.0 MW Utilizing Fuel Containing a Minimum of 60%	25

Sewage Digester Gas by Volume on
a Daily Average

And,

$$EFF = \frac{3413 \times 100\%}{\text{Actual Heat Rate at higher heat value (HHV) of Fuel (BTU/KW-HR)}}$$

or,

$$EFF = \frac{(\textit{Manufacturer's Rated Efficiency at Lower Heating Value (LHV)}) \times \frac{LHV}{HHV}}{}$$

or

EFF = the demonstrated percent efficiency of the gas turbine ~~unit~~ only as calculated without consideration of any downstream energy recovery from the actual heat rate, (BTU/KW HR) or 1.34 BTU/HP; corrected to the HHV (higher heating value) of the fuel, as measured at peak load for that facility; or the manufacturer's continuous rated percent efficiency (manufacturer's rated efficiency) of the gas turbine ~~unit~~ after correction from LHV (lower heating value) to the HHV of the fuel, whichever efficiency is higher. The value of EFF shall not be less than 25 percent. Gas turbines ~~units~~ with lower efficiencies will be assigned a 25 percent efficiency for this calculation.

(2) The operator of any existing gas turbine ~~unit~~ subject to this rule shall also be subject to Regulation XIII if carbon monoxide (CO) emissions increase as a result of the application of NO_x controls.

(3) Notwithstanding the exemptions contained in Rule 2001 – Applicability, Table I — Rules Not Applicable to RECLAIM Facilities for Requirements Pertaining to NO_x Emissions, on and after January 1, 2024, or when required by a permit to operate, whichever occurs first, the owner or operator of any stationary gas turbine shall not operate such unit under load conditions, excluding start-up, shutdown, and tuning periods, which result in the discharge of NO_x emissions, directly or indirectly, into the atmosphere at concentrations in excess of the following emission limits listed in Table I.

Table I: Emissions Limits for Stationary Gas Turbines
(Corrected to 15% oxygen on a dry basis)

Fuel Type	NO_x (ppmv)	Ammonia (ppmv)
Liquid Fuel – Turbines Located on Outer Continental Shelf	30	5
Natural Gas – Combined Cycle	2	5
Natural Gas – Pipeline Gas Turbine	8	5
Natural Gas – Simple Cycle	2.5	5
Produced Gas	5	5
Produced Gas – Turbines Located on Outer Continental Shelf	15	5
Other	12.5	5

(4) Start-Up, Shutdown, and Tuning

The owner or operator of a stationary gas turbine shall meet start-up, shutdown, and tuning requirements in the SCAQMD permit to operate. On or after January 1, 2024, the SCAQMD permit to operate shall include limitations for duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings.

(5) Averaging Time

(A) Stationary gas turbines installed prior to [*Date of Adoption*] shall comply with the averaging time requirements specified on the SCAQMD permit to operate as of [*Date of Adoption*], not to exceed 3 hours.

(B) Stationary gas turbines installed after [*Date of Adoption*] shall average the NO_x, and ammonia emissions limits in Table I over a 60-minute rolling average.

(6) Prohibition of Liquid Fuel

An owner or operator of a stationary gas turbine shall not burn liquid fuel in a stationary gas turbine except for those located in the Outer Continental Shelf. Stationary gas turbines located on the Outer Continental Shelf burning 10 percent or less by volume liquid –fuel shall be subject to the Produced Gas – Turbines Located on Outer Continental Shelf limit at all times.

(7) On or before July 1, 2022, the owner or operator of a stationary gas turbine shall submit an application for change of permit conditions to reconcile their permit to operate with Rule 1134.

(~~d~~e) Monitoring and Source Testing

The owner or operator of any stationary gas turbine ~~unit~~ subject to the provisions of this rule shall perform the following actions:

(1) For ~~cogeneration and combined cycle~~ gas turbines ~~units~~ 2.9 MW and larger (continuous rating by the manufacturer without power augmentation) located at a non-RECLAIM NO_x facility, install, operate, and maintain in calibration a continuous in-stack NO_x and oxygen monitoring system which meets the requirements of SCAQMD Rule 218 – Continuous Emission Monitoring~~40 CFR Part 60, Appendix B, Spec. 2, for NOx, Spec. 3 for oxygen (except the alternative RA procedures for Spec. 2 shall not apply), the 2 and 24 -hour calibration spec. of Rule 218, and 40 CFR Part 60, Appendix F~~ to demonstrate compliance with the emission limits of this rule. ~~The continuous emissions monitoring system shall have data gathering and retrieval capability which meets the reporting requirements of 40 CFR part 60.7(c), 60.7(d), and 60.13.~~ This system shall include equipment that measures and records the following:

(A) Flow rate of liquids or gases and the ratio of water or steam to fuel added to the combustion chamber or to the exhaust for the reduction of NO_x emissions, as applicable~~.~~; and

(B) Elapsed time of operation.

(2) Source Testing

(A) The owner or operator of any existing gas turbine located at a non-RECLAIM NO_x source operating without a continuous emission monitoring system, ~~Provide~~ shall provide source test information regarding the gas turbine's ~~unit's~~ exhaust gas NO_x concentration, and the demonstrated percent efficiency (EFF), or the manufacturer's rated EFF, if the Executive Officer determines that it is representative of the unit's EFF, and the carbon monoxide concentration as specified pursuant to paragraph (~~e~~f)(1). NO_x and carbon monoxide concentrations shall be in ppm by volume, corrected to 15 percent oxygen on a dry basis.

(B) The owner or operator of each stationary gas turbine with a catalytic control device shall conduct source testing or may utilize an ammonia CEMS certified under an approved SCAQMD protocol to demonstrate compliance with the ammonia emission limit.

(~~B~~C) Source Test Frequency

(i) The owner or operator of each stationary gas turbine~~s~~ ~~not~~ operating without a continuous emission monitor and ~~Units~~ emitting 25 tons or more of NO_x per calendar year shall ~~be~~ perform source tests~~ed,~~ at least once every ~~12 months~~calendar year.

(ii) ~~All other~~ The owner or operator of each stationary gas turbine~~s~~ ~~not~~ operating without a continuous emission monitor and emitting less than 25 tons ~~existing units~~ shall ~~be~~ perform source tests~~ed~~ ~~within 90 days after every 8,400 hours of operation~~at least once every three calendar years.

(iii) Stationary gas turbine turbines with a catalytic control device not utilizing an ammonia CEMS shall conduct quarterly source tests to demonstrate compliance during the first twelve months of operation of the catalytic control device and every calendar year thereafter when four consecutive source tests demonstrate compliance with the ammonia emission limit. If an annual test is failed, four consecutive quarterly source tests shall demonstrate compliance with the ammonia emissions limits prior to resuming annual source tests.

(3) The owner or operator of each RECLAIM NO_x source subject to Rule 1134 shall comply with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_x) Emissions to demonstrate compliance with the NOx emissions limits of this rule.

(4) The owner or operator of each stationary gas turbine located at a former RECLAIM NO_x Source subject to Rule 1134 shall conduct monitoring and recordkeeping pursuant to SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_x) Emissions, excluding the following:

(A) Rule 2012 paragraphs (c)(3) through (c)(8), reporting and Super Compliant facilities;

(B) Rule 2012 subparagraphs (d)(2)(B) through (d)(2)(E), reporting and emission factors;

(C) Rule 2012 subdivision (e) NO_x Process Units;

(D) Rule 2012 paragraphs (g)(5) through (g)(8), reporting;

(E) Rule 2012 paragraphs (h)(1), (h)(2), and (h)(4) through (h)(6), reporting and mass emissions;

(F) Rule 2012 subdivisions, (i), (k), and (l), Recordkeeping, Exemptions, Appeals; and

(G) Rule 2012 Reported Data and Transmitting/Reporting Frequency requirements from Appendix A – "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NO_x) Emissions."

(~~e~~f) Test Methods

The following may be used by the Executive Officer to verify the concentrations of NO_x, ammonia, carbon monoxide (CO), and oxygen subject to the provisions of this rule. Emissions determined to exceed any limits established by this rule through either of the following shall constitute a violation of this rule.

(1) ~~District~~ SCAQMD Test Methods 3.1, 7.1, 10.1 ~~and~~ 100.1, and 207.1, and EPA Test Method 10 or any method deemed to be equivalent by the Executive Officer and approved by CARB and EPA.

(2) Data obtained from a continuous emissions monitoring system, which is installed and properly operated according to paragraph (~~d~~e)(1) of this rule and as approved by the Executive Officer.

(~~f~~g) Recordkeeping

The ~~facility~~ owner or operator of a stationary gas turbine shall comply with the following provisions effective [*90 days after Date of Adoption*]:

(1) All records shall be maintained at the facility for a period of two years and made available to ~~District~~ SCAQMD staff upon request.

(2) Maintain a gas turbine operating log that includes, on a daily basis, the actual ~~Pacific Standard Time~~ start-up and ~~stop~~ shut-down time;~~,~~ total hours of operation; type and quantity of fuel used (liquid/gas);~~,~~ cumulative hours of operation to date for the calendar year; and if applicable the cumulative hours of operation since the last source test required by subparagraph (~~d~~e)(2)(A).

(3) ~~A monthly summary of emissions pursuant to paragraph (d)(1) shall be submitted to the District on or before the last day of the following calendar month.~~Install, operate, and maintain a data acquisition system (DAS) to demonstrate compliance with the provisions subdivisions (d) and (h) of this rule.

(4) The results of source tests shall be submitted to the ~~District~~ SCAQMD in a form and manner as specified by the Executive Officer within 30 days after source testing is completed.

(5) Any person using an emission control system as a means of complying with this rule shall maintain daily records of system operation and maintenance which will demonstrate continuous operation and compliance of the emission control device during periods of emission producing activities.

(~~g~~h) Exemptions

The owner or operator ~~Any person~~ seeking to qualify for any one of the following exemptions has the burden of proving their ~~its existing~~ stationary gas turbine ~~unit~~ meets the applicable specified criteria.

(1) All provisions of this rule shall not apply to the following:

(A) Laboratory gas turbines ~~units~~ used in research and testing~~.~~; and

(B) Gas turbines ~~units~~ operated exclusively for ~~fire fighting~~firefighting and/or flood control.

~~(C) Chemical processing gas turbine units.~~

~~(D) All existing pipeline gas turbine units located in the Southeast Desert Air Basin (SEDAB).~~

(2) Emergency Standby Gas Turbines

(A) The owner or operator of an emergency standby gas turbine shall not be subject to ~~The provisions of~~ subdivisions (~~c~~d) and (~~d~~e), and paragraphs (~~f~~g)(3), (~~f~~g)(4), and (~~f~~g)(5) for that unit, provided that the emergency standby gas turbine ~~units shall not apply to the following~~:

(i) ~~(A)~~Installs and maintains in proper operation a non-resettable engine hour meter; and

(ii) ~~Emergency standby and peaking gas turbine units~~ D~~d~~emonstrates~~d~~ ~~to operate~~ less than 200 hours of operation per calendar year~~ of operation,~~ ~~which have installed and~~

~~maintained in proper operation a non-resettable engine hour meter.~~

~~(B) All existing gas turbine units located in the Southeast Desert Air Basin (SEDAB) which are rated below 4 MW and operate less than 877 hours per year.~~

~~(C) All existing gas turbine units located on San Clemente Island which are rated below 4 MW and operate less than 877 hours per year.~~

(B) ~~However, i~~If the hour-per-year limit is exceeded, the exemption shall be automatically and permanently withdrawn. The owner or operator of any stationary gas turbine unit exempt under ~~this~~ subparagraph (h)(2)(A) ~~must~~ shall:

(i) ~~n~~Notify the Executive Officer within seven days ~~if~~ of the date the hour-per-year limit is exceeded~~.~~;

(ii) Within 30 days after the date the hour-per-year limit is exceeded, ~~the operator must~~ submit a permit application for modification to equipment to meet the applicable compliance limit within 24 months of the date the hour-per-year limit is exceeded. Included with this permit application, the operator ~~must~~ shall submit an emission control plan including a schedule of increments of progress for the installation of the required control equipment. This plan and schedule shall be subject to the review and approval of the Executive Officer.

(3) Combined Cycle Gas Turbines

The owner or operator of a combined cycle gas turbine installed prior to [*Date of Adoption*] shall not be subject to paragraph (d)(3) for that combined cycle gas turbine, provided that:

(A) The SCAQMD permit to operate as of [*Date of Adoption*] includes a condition limiting the NOx concentration to 2.5 ppmv NOx at 15% oxygen on a dry basis; and

(B) The NOx and ammonia limits, averaging times, and start-up, shutdown, and tuning requirements specified on the SCAQMD permit to operate as of *[Date of Adoption*] are retained.

(4) Low-Use

(A) The owner or operator of a stationary gas turbine installed prior to [*Date of Adoption*] shall not be subject to subdivision (d) for that stationary gas turbine, provided that:

(i) The stationary gas turbine maintains an annual capacity factor of less than twenty-five percent each calendar year;

(ii) The stationary gas turbine maintains an annual capacity factor of less than ten percent averaged over three consecutive calendar years on a rolling basis;

(iii) The stationary gas turbine retains the NO_x and ammonia limits, averaging times, and start-up, shutdown, and tuning requirements specified on the SCAQMD permit to operate as of [*Date of Adoption*];

(iv) The NOx limit shall not exceed 9 ppmv at 15% oxygen on a dry basis and the ammonia limit shall not exceed 10 ppmv at 15% oxygen on a dry basis; and

(v) The low-use exemption is a condition of the SCAQMD permit.

(B) Initial Requirement for Low-Use Exemption

The owner or operator of a stationary gas turbine that elects the low-use exemption pursuant to subparagraph (h)(4)(A) shall submit permit applications for each stationary gas turbine requesting the change of SCAQMD permit conditions to incorporate the low-use exemption by July 1, 2022.

(C) Eligibility of the low-use exemption shall be determined annually for each stationary gas turbine and reported to the Executive Officer no later than March 1 following each reporting year.

(D) If stationary gas turbine with a low-use exemption pursuant to subparagraph (h)(4)(A) exceeds the annual or three-year average annual capacity factor limit, such an exceedance shall be a violation of this rule and the owner or operator of that stationary gas turbine is subject to issuance of a notice of violation each year there is an exceedance for each annual and/or three-year exceedance. The owner or operator of that stationary gas turbine shall:

(i) Submit complete SCAQMD permit applications to repower, retrofit, or retire that stationary gas turbine within six months from the date of the reported exceedance of subparagraph (h)(4)(A);

(ii) Submit a CEMS Plan within six months from the date of complete SCAQMD permit application submittal pursuant to clause (h)(4)(D)(i); and

(iii) Not operate that stationary gas turbine in a manner that exceeds the emissions limits listed in Table I after two years from the date of the reported exceedance of subparagraph (h)(4)(A).

(5) The ammonia limits in Table 1 and ammonia source testing requirements of subparagraph (e)(2)(B) shall not apply to turbines that do not use selective catalytic reduction or other processes that add ammonia into the exhaust gas.

APPENDIX B

CalEEMod Files And Assumptions

APPENDIX B-1

CalEEMod Files And Assumptions

PAR1134 Construction SCR and NH3 Tank

PAR1134_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

PAR1134_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - SCR: Demolition: 15 days; Site Preparation: 5 days; Building Construction: 180 days; Paving: 5 days

Off-road Equipment - Cranes (1): 2 hours per day; Forklifts (1): 5 hours per day; Generator Sets (1): 8 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 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): 3 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 2 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (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	180.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	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	10.00	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	0.1051	0.8910	0.8582	1.6300e-003	0.0381	0.0465	0.0845	0.0139	0.0446	0.0585	0.0000	141.9421	141.9421	0.0210	0.0000	142.4658
Maximum	**0.1051**	**0.8910**	**0.8582**	**1.6300e-003**	**0.0381**	**0.0465**	**0.0845**	**0.0139**	**0.0446**	**0.0585**	**0.0000**	**141.9421**	**141.9421**	**0.0210**	**0.0000**	**142.4658**

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	0.1051	0.8910	0.8582	1.6300e-003	0.0381	0.0465	0.0845	0.0139	0.0446	0.0585	0.0000	141.9420	141.9420	0.0210	0.0000	142.4657
Maximum	**0.1051**	**0.8910**	**0.8582**	**1.6300e-003**	**0.0381**	**0.0465**	**0.0845**	**0.0139**	**0.0446**	**0.0585**	**0.0000**	**141.9420**	**141.9420**	**0.0210**	**0.0000**	**142.4657**

	ROG	**NOx**	**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**	0.3362	0.3362
2	**4-2-2020**	**7-1-2020**	0.3110	0.3110
3	**7-2-2020**	**9-30-2020**	0.3110	0.3110
		Highest	0.3362	0.3362

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	1/22/2020	5	15	
2	Site Preparation	Site Preparation	1/23/2020	1/29/2020	5	5	
3	Building Construction	Building Construction	1/30/2020	10/7/2020	5	180	
4	Paving	Paving	10/8/2020	10/14/2020	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)

<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
Demolition	Cranes	1	2.00	231	0.29
Demolition	Rubber Tired Dozers	1	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
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	2.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	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	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	4	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	6	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	7.8100e-003	0.0746	0.0518	9.0000e-005		3.9600e-003	3.9600e-003		3.7600e-003	3.7600e-003	0.0000	8.1170	8.1170	1.5800e-003	0.0000	8.1565
Total	**7.8100e-003**	**0.0746**	**0.0518**	**9.0000e-005**	**0.0000**	**3.9600e-003**	**3.9600e-003**	**0.0000**	**3.7600e-003**	**3.7600e-003**	**0.0000**	**8.1170**	**8.1170**	**1.5800e-003**	**0.0000**	**8.1565**

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	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	6.7000e-004	5.1000e-004	5.6800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4815	1.4815	4.0000e-005	0.0000	1.4826
Total	**7.1000e-004**	**1.9100e-003**	**5.9600e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7500e-003**	**4.6000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.8588**	**1.8588**	**7.0000e-005**	**0.0000**	**1.8605**

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	7.8100e-003	0.0746	0.0518	9.0000e-005		3.9600e-003	3.9600e-003		3.7600e-003	3.7600e-003	0.0000	8.1170	8.1170	1.5800e-003	0.0000	8.1564
Total	**7.8100e-003**	**0.0746**	**0.0518**	**9.0000e-005**	**0.0000**	**3.9600e-003**	**3.9600e-003**	**0.0000**	**3.7600e-003**	**3.7600e-003**	**0.0000**	**8.1170**	**8.1170**	**1.5800e-003**	**0.0000**	**8.1564**

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	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	6.7000e-004	5.1000e-004	5.6800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4815	1.4815	4.0000e-005	0.0000	1.4826
Total	**7.1000e-004**	**1.9100e-003**	**5.9600e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7500e-003**	**4.6000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.8588**	**1.8588**	**7.0000e-005**	**0.0000**	**1.8605**

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**

3.3 Site Preparation - 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	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**

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**

3.3 Site Preparation - 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	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	0.0824	0.7164	0.6921	1.1600e-003		0.0397	0.0397		0.0383	0.0383	0.0000	98.7261	98.7261	0.0169	0.0000	99.1475
Total	**0.0824**	**0.7164**	**0.6921**	**1.1600e-003**		**0.0397**	**0.0397**		**0.0383**	**0.0383**	**0.0000**	**98.7261**	**98.7261**	**0.0169**	**0.0000**	**99.1475**

3.4 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	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
Total	**9.5500e-003**	**0.0542**	**0.0801**	**3.1000e-004**	**0.0226**	**3.9000e-004**	**0.0230**	**6.0600e-003**	**3.7000e-004**	**6.4300e-003**	**0.0000**	**28.8458**	**28.8458**	**1.2400e-003**	**0.0000**	**28.8767**

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	0.0824	0.7164	0.6921	1.1600e-003		0.0397	0.0397		0.0383	0.0383	0.0000	98.7260	98.7260	0.0169	0.0000	99.1474
Total	**0.0824**	**0.7164**	**0.6921**	**1.1600e-003**		**0.0397**	**0.0397**		**0.0383**	**0.0383**	**0.0000**	**98.7260**	**98.7260**	**0.0169**	**0.0000**	**99.1474**

3.4 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	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
Total	**9.5500e-003**	**0.0542**	**0.0801**	**3.1000e-004**	**0.0226**	**3.9000e-004**	**0.0230**	**6.0600e-003**	**3.7000e-004**	**6.4300e-003**	**0.0000**	**28.8458**	**28.8458**	**1.2400e-003**	**0.0000**	**28.8767**

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	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2000e-003**	**0.0113**	**0.0112**	**2.0000e-005**		**6.1000e-004**	**6.1000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**1.4855**	**1.4855**	**4.3000e-004**	**0.0000**	**1.4963**

3.5 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	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**

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	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2000e-003**	**0.0113**	**0.0112**	**2.0000e-005**		**6.1000e-004**	**6.1000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**1.4855**	**1.4855**	**4.3000e-004**	**0.0000**	**1.4963**

3.5 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	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**

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

<u>Unmitigated</u>

	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

PAR1134_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

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - SCR: Demolition: 15 days; Site Preparation: 5 days; Building Construction: 180 days; Paving: 5 days

Off-road Equipment - Cranes (1): 2 hours per day; Forklifts (1): 5 hours per day; Generator Sets (1): 8 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 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): 3 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 2 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (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	180.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

PAR1134_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Summer

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	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	10.00	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	1.3044	12.8970	8.6326	0.0164	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,575.2959	1,575.2959	0.3389	0.0000	1,580.8367
Maximum	**1.3044**	**12.8970**	**8.6326**	**0.0164**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,575.2959**	**1,575.2959**	**0.3389**	**0.0000**	**1,580.8367**

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	1.3044	12.8970	8.6326	0.0164	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,575.2959	1,575.2959	0.3389	0.0000	1,580.8367
Maximum	**1.3044**	**12.8970**	**8.6326**	**0.0164**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,575.2959**	**1,575.2959**	**0.3389**	**0.0000**	**1,580.8367**

	ROG	**NOx**	**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	1/22/2020	5	15	
2	Site Preparation	Site Preparation	1/23/2020	1/29/2020	5	5	
3	Building Construction	Building Construction	1/30/2020	10/7/2020	5	180	
4	Paving	Paving	10/8/2020	10/14/2020	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	Rubber Tired Dozers	1	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
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	2.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	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	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	4	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	6	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					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020		1,192.9997	1,192.9997	0.2317		1,198.7923
Total	**1.0411**	**9.9487**	**6.9046**	**0.0125**	**1.0000e-005**	**0.5284**	**0.5284**	**0.0000**	**0.5020**	**0.5020**		**1,192.9997**	**1,192.9997**	**0.2317**		**1,198.7923**

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	5.0600e-003	0.1814	0.0361	5.2000e-004	0.0117	5.8000e-004	0.0122	3.1900e-003	5.6000e-004	3.7500e-003		55.8886	55.8886	3.7500e-003		55.9824
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	**0.0956**	**0.2423**	**0.8537**	**2.8200e-003**	**0.2352**	**2.2800e-003**	**0.2375**	**0.0625**	**2.1200e-003**	**0.0646**		**284.7721**	**284.7721**	**0.0103**		**285.0304**

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	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020	0.0000	1,192.9997	1,192.9997	0.2317		1,198.7923
Total	**1.0411**	**9.9487**	**6.9046**	**0.0125**	**1.0000e-005**	**0.5284**	**0.5284**	**0.0000**	**0.5020**	**0.5020**	**0.0000**	**1,192.9997**	**1,192.9997**	**0.2317**		**1,198.7923**

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	5.0600e-003	0.1814	0.0361	5.2000e-004	0.0117	5.8000e-004	0.0122	3.1900e-003	5.6000e-004	3.7500e-003		55.8886	55.8886	3.7500e-003		55.9824
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	**0.0956**	**0.2423**	**0.8537**	**2.8200e-003**	**0.2352**	**2.2800e-003**	**0.2375**	**0.0625**	**2.1200e-003**	**0.0646**		**284.7721**	**284.7721**	**0.0103**		**285.0304**

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**

3.3 Site Preparation - 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	0.0000	0.0000	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**

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	1,037.7150	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**	**0.0000**	**1,037.7150**	**1,037.7150**	**0.3356**		**1,046.1054**

3.3 Site Preparation - 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	0.0000	0.0000	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	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253		1,209.1881	1,209.1881	0.2064		1,214.3491
Total	**0.9160**	**7.9597**	**7.6901**	**0.0128**		**0.4415**	**0.4415**		**0.4253**	**0.4253**		**1,209.1881**	**1,209.1881**	**0.2064**		**1,214.3491**

3.4 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	0.0164	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**

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	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253	0.0000	1,209.1881	1,209.1881	0.2064		1,214.3491
Total	**0.9160**	**7.9597**	**7.6901**	**0.0128**		**0.4415**	**0.4415**		**0.4253**	**0.4253**	**0.0000**	**1,209.1881**	**1,209.1881**	**0.2064**		**1,214.3491**

3.4 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	0.0164	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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**		**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**	**0.0000**	**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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

PAR1134_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

PAR1134_Construction_SCR and NH3 Tank - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - SCR: Demolition: 15 days; Site Preparation: 5 days; Building Construction: 180 days; Paving: 5 days

Off-road Equipment - Cranes (1): 2 hours per day; Forklifts (1): 5 hours per day; Generator Sets (1): 8 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 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): 3 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 2 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (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	180.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	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	10.00	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	1.3085	12.8999	8.5655	0.0162	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,556.5175	1,556.5175	0.3387	0.0000	1,562.0633
Maximum	**1.3085**	**12.8999**	**8.5655**	**0.0162**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,556.5175**	**1,556.5175**	**0.3387**	**0.0000**	**1,562.0633**

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	1.3085	12.8999	8.5655	0.0162	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,556.5175	1,556.5175	0.3387	0.0000	1,562.0633
Maximum	**1.3085**	**12.8999**	**8.5655**	**0.0162**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,556.5175**	**1,556.5175**	**0.3387**	**0.0000**	**1,562.0633**

	ROG	**NOx**	**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	1/22/2020	5	15	
2	Site Preparation	Site Preparation	1/23/2020	1/29/2020	5	5	
3	Building Construction	Building Construction	1/30/2020	10/7/2020	5	180	
4	Paving	Paving	10/8/2020	10/14/2020	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

PAR1134_Construction_SCR and NH3 Tank - 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	2.00	231	0.29
Demolition	Rubber Tired Dozers	1	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
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	2.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	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	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	4	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	6	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					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020		1,192.9997	1,192.9997	0.2317		1,198.7923
Total	**1.0411**	**9.9487**	**6.9046**	**0.0125**	**1.0000e-005**	**0.5284**	**0.5284**	**0.0000**	**0.5020**	**0.5020**		**1,192.9997**	**1,192.9997**	**0.2317**		**1,198.7923**

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	5.2100e-003	0.1838	0.0389	5.1000e-004	0.0117	5.9000e-004	0.0122	3.1900e-003	5.7000e-004	3.7600e-003		54.8599	54.8599	3.9100e-003		54.9577
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	**0.1039**	**0.2504**	**0.7750**	**2.6600e-003**	**0.2352**	**2.2900e-003**	**0.2375**	**0.0625**	**2.1300e-003**	**0.0646**		**268.9329**	**268.9329**	**0.0101**		**269.1842**

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	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020	0.0000	1,192.9997	1,192.9997	0.2317		1,198.7923
Total	**1.0411**	**9.9487**	**6.9046**	**0.0125**	**1.0000e-005**	**0.5284**	**0.5284**	**0.0000**	**0.5020**	**0.5020**	**0.0000**	**1,192.9997**	**1,192.9997**	**0.2317**		**1,198.7923**

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	5.2100e-003	0.1838	0.0389	5.1000e-004	0.0117	5.9000e-004	0.0122	3.1900e-003	5.7000e-004	3.7600e-003		54.8599	54.8599	3.9100e-003		54.9577
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	**0.1039**	**0.2504**	**0.7750**	**2.6600e-003**	**0.2352**	**2.2900e-003**	**0.2375**	**0.0625**	**2.1300e-003**	**0.0646**		**268.9329**	**268.9329**	**0.0101**		**269.1842**

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**

3.3 Site Preparation - 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	0.0000	0.0000	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**

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	1,037.7150	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**	**0.0000**	**1,037.7150**	**1,037.7150**	**0.3356**		**1,046.1054**

3.3 Site Preparation - 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	0.0000	0.0000	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	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253		1,209.1881	1,209.1881	0.2064		1,214.3491
Total	**0.9160**	**7.9597**	**7.6901**	**0.0128**		**0.4415**	**0.4415**		**0.4253**	**0.4253**		**1,209.1881**	**1,209.1881**	**0.2064**		**1,214.3491**

3.4 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	0.0172	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**

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	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253	0.0000	1,209.188 1	1,209.188 1	0.2064		1,214.349 1
Total	**0.9160**	**7.9597**	**7.6901**	**0.0128**		**0.4415**	**0.4415**		**0.4253**	**0.4253**	**0.0000**	**1,209.188 1**	**1,209.188 1**	**0.2064**		**1,214.349 1**

3.4 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	0.0172	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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**		**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**	**0.0000**	**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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

PAR1134_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	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

PAR1134 Construction Stationary Gas Turbine

PAR1134_Construction_Stationary Gas Turbine

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 - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 180 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; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 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; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 3 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (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	180.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	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	10.00	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	0.1149	0.9976	0.9090	1.7500e-003	0.0386	0.0513	0.0899	0.0141	0.0491	0.0631	0.0000	152.4164	152.4164	0.0238	0.0000	153.0124
Maximum	**0.1149**	**0.9976**	**0.9090**	**1.7500e-003**	**0.0386**	**0.0513**	**0.0899**	**0.0141**	**0.0491**	**0.0631**	**0.0000**	**152.4164**	**152.4164**	**0.0238**	**0.0000**	**153.0124**

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	0.1149	0.9976	0.9090	1.7500e-003	0.0386	0.0513	0.0899	0.0141	0.0491	0.0631	0.0000	152.4162	152.4162	0.0238	0.0000	153.0123
Maximum	**0.1149**	**0.9976**	**0.9090**	**1.7500e-003**	**0.0386**	**0.0513**	**0.0899**	**0.0141**	**0.0491**	**0.0631**	**0.0000**	**152.4162**	**152.4162**	**0.0238**	**0.0000**	**153.0123**

	ROG	**NOx**	**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	**0.01**	**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**

PAR1134_Construction_Stationary Gas Turbine - South Coast AQMD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2020	4-1-2020	0.3776	0.3776
2	4-2-2020	7-1-2020	0.3347	0.3347
3	7-2-2020	9-30-2020	0.3347	0.3347
		Highest	0.3776	0.3776

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	10/14/2020	5	180	
4	Paving	Paving	10/15/2020	10/21/2020	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)

<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
Demolition	Cranes	1	3.00	231	0.29
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
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	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	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	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	4	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	6	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	0.0123	0.1204	0.0769	1.4000e-004		6.2600e-003	6.2600e-003		5.9100e-003	5.9100e-003	0.0000	12.3946	12.3946	2.6100e-003	0.0000	12.4598
Total	**0.0123**	**0.1204**	**0.0769**	**1.4000e-004**	**0.0000**	**6.2600e-003**	**6.2600e-003**	**0.0000**	**5.9100e-003**	**5.9100e-003**	**0.0000**	**12.3946**	**12.3946**	**2.6100e-003**	**0.0000**	**12.4598**

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	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**

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	0.0123	0.1204	0.0769	1.4000e-004		6.2600e-003	6.2600e-003		5.9100e-003	5.9100e-003	0.0000	12.3945	12.3945	2.6100e-003	0.0000	12.4598
Total	**0.0123**	**0.1204**	**0.0769**	**1.4000e-004**	**0.0000**	**6.2600e-003**	**6.2600e-003**	**0.0000**	**5.9100e-003**	**5.9100e-003**	**0.0000**	**12.3945**	**12.3945**	**2.6100e-003**	**0.0000**	**12.4598**

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	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**

3.3 Site Preparation - 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	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**

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**

3.3 Site Preparation - 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	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	0.0875	0.7770	0.7159	1.2200e-003		0.0422	0.0422		0.0406	0.0406	0.0000	104.4290	104.4290	0.0187	0.0000	104.8965
Total	**0.0875**	**0.7770**	**0.7159**	**1.2200e-003**		**0.0422**	**0.0422**		**0.0406**	**0.0406**	**0.0000**	**104.4290**	**104.4290**	**0.0187**	**0.0000**	**104.8965**

3.4 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	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
Total	**9.5500e-003**	**0.0542**	**0.0801**	**3.1000e-004**	**0.0226**	**3.9000e-004**	**0.0230**	**6.0600e-003**	**3.7000e-004**	**6.4300e-003**	**0.0000**	**28.8458**	**28.8458**	**1.2400e-003**	**0.0000**	**28.8767**

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	0.0875	0.7770	0.7159	1.2200e-003		0.0422	0.0422		0.0406	0.0406	0.0000	104.4289	104.4289	0.0187	0.0000	104.8964
Total	**0.0875**	**0.7770**	**0.7159**	**1.2200e-003**		**0.0422**	**0.0422**		**0.0406**	**0.0406**	**0.0000**	**104.4289**	**104.4289**	**0.0187**	**0.0000**	**104.8964**

3.4 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	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
Total	**9.5500e-003**	**0.0542**	**0.0801**	**3.1000e-004**	**0.0226**	**3.9000e-004**	**0.0230**	**6.0600e-003**	**3.7000e-004**	**6.4300e-003**	**0.0000**	**28.8458**	**28.8458**	**1.2400e-003**	**0.0000**	**28.8767**

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	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2000e-003**	**0.0113**	**0.0112**	**2.0000e-005**		**6.1000e-004**	**6.1000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**1.4855**	**1.4855**	**4.3000e-004**	**0.0000**	**1.4963**

3.5 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	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**

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	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2000e-003**	**0.0113**	**0.0112**	**2.0000e-005**		**6.1000e-004**	**6.1000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**1.4855**	**1.4855**	**4.3000e-004**	**0.0000**	**1.4963**

3.5 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	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**

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

PAR1134_Construction_Stationary Gas Turbine

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

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 180 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; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 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; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 3 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (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	180.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	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	10.00	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	1.3270	12.8970	8.8971	0.0172	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,645.1446	1,645.1446	0.3389	0.0000	1,651.2502
Maximum	**1.3270**	**12.8970**	**8.8971**	**0.0172**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,645.1446**	**1,645.1446**	**0.3389**	**0.0000**	**1,651.2502**

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	1.3270	12.8970	8.8971	0.0172	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,645.1446	1,645.1446	0.3389	0.0000	1,651.2502
Maximum	**1.3270**	**12.8970**	**8.8971**	**0.0172**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,645.1446**	**1,645.1446**	**0.3389**	**0.0000**	**1,651.2502**

	ROG	**NOx**	**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	10/14/2020	5	180	
4	Paving	Paving	10/15/2020	10/21/2020	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	3.00	231	0.29
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
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	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	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	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	4	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	6	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	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914		1,366.2663	1,366.2663	0.2877		1,373.4598
Total	**1.2327**	**12.0391**	**7.6855**	**0.0142**	**0.0000**	**0.6256**	**0.6256**	**0.0000**	**0.5914**	**0.5914**		**1,366.2663**	**1,366.2663**	**0.2877**		**1,373.4598**

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	0.0905	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**

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	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914	0.0000	1,366.2663	1,366.2663	0.2877		1,373.4598
Total	**1.2327**	**12.0391**	**7.6855**	**0.0142**	**0.0000**	**0.6256**	**0.6256**	**0.0000**	**0.5914**	**0.5914**	**0.0000**	**1,366.2663**	**1,366.2663**	**0.2877**		**1,373.4598**

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	0.0905	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		1,037.7150	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**

3.3 Site Preparation - 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	0.0000	0.0000	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**

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	1,037.7150	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**	**0.0000**	**1,037.7150**	**1,037.7150**	**0.3356**		**1,046.1054**

3.3 Site Preparation - 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	0.0000	0.0000	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	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509		1,279.0369	1,279.0369	0.2290		1,284.7626
Total	**0.9727**	**8.6336**	**7.9545**	**0.0136**		**0.4693**	**0.4693**		**0.4509**	**0.4509**		**1,279.0369**	**1,279.0369**	**0.2290**		**1,284.7626**

3.4 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	0.0164	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**

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	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509	0.0000	1,279.036 8	1,279.036 8	0.2290		1,284.762 6
Total	**0.9727**	**8.6336**	**7.9545**	**0.0136**		**0.4693**	**0.4693**		**0.4509**	**0.4509**	**0.0000**	**1,279.036 8**	**1,279.036 8**	**0.2290**		**1,284.762 6**

3.4 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	0.0164	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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**		**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**	**0.0000**	**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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

PAR1134_Construction_Stationary Gas Turbine

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

PAR1134_Construction_Stationary Gas Turbine - 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: 180 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; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 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; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 3 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (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	180.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	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	10.00	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	1.3353	12.8999	8.8299	0.0170	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,626.366 2	1,626.366 2	0.3387	0.0000	1,632.476 8
Maximum	**1.3353**	**12.8999**	**8.8299**	**0.0170**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,626.366 2**	**1,626.366 2**	**0.3387**	**0.0000**	**1,632.476 8**

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	1.3353	12.8999	8.8299	0.0170	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,626.366 2	1,626.366 2	0.3387	0.0000	1,632.476 8
Maximum	**1.3353**	**12.8999**	**8.8299**	**0.0170**	**5.3811**	**0.6951**	**6.0762**	**2.9261**	**0.6395**	**3.5656**	**0.0000**	**1,626.366 2**	**1,626.366 2**	**0.3387**	**0.0000**	**1,632.476 8**

	ROG	**NOx**	**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	10/14/2020	5	180	
4	Paving	Paving	10/15/2020	10/21/2020	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	3.00	231	0.29
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
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	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	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	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	4	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	6	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	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914		1,366.2663	1,366.2663	0.2877		1,373.4598
Total	**1.2327**	**12.0391**	**7.6855**	**0.0142**	**0.0000**	**0.6256**	**0.6256**	**0.0000**	**0.5914**	**0.5914**		**1,366.2663**	**1,366.2663**	**0.2877**		**1,373.4598**

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	0.0987	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**

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	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914	0.0000	1,366.2663	1,366.2663	0.2877		1,373.4598
Total	**1.2327**	**12.0391**	**7.6855**	**0.0142**	**0.0000**	**0.6256**	**0.6256**	**0.0000**	**0.5914**	**0.5914**	**0.0000**	**1,366.2663**	**1,366.2663**	**0.2877**		**1,373.4598**

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	0.0987	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		1,037.715 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**

3.3 Site Preparation - 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	0.0000	0.0000	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**

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	1,037.7150	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**	**0.0000**	**1,037.7150**	**1,037.7150**	**0.3356**		**1,046.1054**

3.3 Site Preparation - 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	0.0000	0.0000	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	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509		1,279.0369	1,279.0369	0.2290		1,284.7626
Total	**0.9727**	**8.6336**	**7.9545**	**0.0136**		**0.4693**	**0.4693**		**0.4509**	**0.4509**		**1,279.0369**	**1,279.0369**	**0.2290**		**1,284.7626**

3.4 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	0.0172	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**

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	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509	0.0000	1,279.0368	1,279.0368	0.2290		1,284.7626
Total	**0.9727**	**8.6336**	**7.9545**	**0.0136**		**0.4693**	**0.4693**		**0.4509**	**0.4509**	**0.0000**	**1,279.0368**	**1,279.0368**	**0.2290**		**1,284.7626**

3.4 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	0.0172	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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**		**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4812**	**4.5275**	**4.4659**	**7.1100e-003**		**0.2446**	**0.2446**		**0.2272**	**0.2272**	**0.0000**	**654.9767**	**654.9767**	**0.1914**		**659.7619**

3.5 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	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**

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 1134 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
2 Facilities Installing 2 SCR Systems	2.6	25.8	17.3	0.03	12.2	7.1
1 Facility Replacing 1 Stationary Gas Turbine	1.3	12.9	8.9	0.02	6.1	3.6
Peak Day - Worst Case Construction Emissions	4.0	38.7	26.2	0.05	18.2	10.7
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 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	Amortized CO2e (MT/yr)	
2 Facilities Installing 2 SCR Systems	283.88	0.04	0.00	284.93		
1 Facility Replacing 1 Stationary Gas Turbine	152.42	0.02	0.00	153.01		
Total Emissions During Construction	436	0	0	438	14.6	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 1134 Requirement	VOC, lb/day	NOx, lb/day	CO, lb/day	SOx, lb/day	PM10, lb/day	PM2.5, lb/day
Increased Ammonia Deliveries for 4 Facilities	0.31	2.08	1.35	0.01	0.14	0.08
Increased Catalyst Delivery and Spent Catalyst Haul for 1 Facility	0.15	1.04	0.68	0.00	0.07	0.04
Daily Peak Operational Emissions	0.46	3.11	2.03	0.01	0.21	0.12
SIGNIFICACNE THRESHOLD FOR OPERATION	55	55	550	150	150	55

Note

1. Replacing a stationary gast turbine is assumed to not create any new operational impacts.

PAR 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr
Total From Ammonia Delivery Truck	18.19	0.00	0.00	18.20
Total From Catalyst Delivery and Spent Catalyst Haul Trucks	2.85	0.00	-	2.86
Total Annual Operational GHG Emissions	21.05	0.00	0.00	21.06

Note

1. Based on an increase of 204 ammonia delivery trips per year, 16 new catalyst deliveries per year , 16 haul trips for spent catalyst.

APPENDIX C-3

CEQA Impact Evaluations – Assumptions and Calculations

SCR

Appendix C-3

CEQA Construction Impact Evaluations

Criteria Pollutant Emissions - Installation of 1 SCR System and Aqueous Ammonia Tank

PAR 1134 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	1.3	12.9	8.6	0.0	6.1	3.6
Daily Peak Construction Emissions	1.3	12.9	8.6	0.0	6.1	3.6
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 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	
1 SCR and Aqueous Ammonia Tank	141.9	0.02	0.0	142.5	
Total Emissions During Construction	141.9	0.0	0.0	142.5	4.75 Amortized Over 30 Years

Notes:

1. The emissions are estimated using CalEEMod.

APPENDIX C-4

CEQA Impact Evaluations – Assumptions and Calculations

Stationary Gas Turbine

Appendix C-4
CEQA Construction Impact Evaluations

Emissions Summary - Replacement Stationary Gas Turbine

PAR 1134 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Replacement Stationary Gas Turbine	1.3	12.9	8.9	0.0	6.1	3.6
Daily Peak Construction Emissions	1.3	12.9	8.9	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 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
Replacement Stationary Gas Turbine	152	0.0	0.0	153.0		
Total Emissions During Construction	152	0.0	0.0	153	5.100	Amortized over 30 Years

Notes:

1. The emissions are estimated using CalEEMod.

APPENDIX C-5

CEQA Impact Evaluations – Assumptions and Calculations

Operational Calculations

Appendix C-5
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 1134	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	18.19	0.00	0.00	18.20
Diesel Delivery Trucks (T6 Construction Truck)	0.68	1.04	0.07	0.04	0.15	0.00	2.85	0.00	0.00	2.86
Total	1.01	1.56	0.10	0.06	0.23	0.01	21.05	0.00	0.00	21.06

All sites	
Max. # used/day	Max. # day used/yr
1	204
2	32

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 catalys
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 D

PAR 1134 List of Affected Facilities and NAICS Code

Appendix D: PAR 1135 List of Affected Facilities

Facility ID	Facility Name	Address	On List per Government Code 65962.5 (Envirostor)?	Distance from School (meters)	Distance from Sensitive Receptor (meters)	Located Within Two Miles of an Airport?
176708	Altagas	1507 Mount Vernon, Pomona, CA	No	231	231	No
177120	Providence St. Johns	1328 22nd St., Santa Monica, CA	No	331	22	No
3093	LA Co., Olive View	14445 Olive View Drive, Sylmar, CA	No	1,676	331	No
800234	Loma Linda Univ	11100 Anderson Street, Loma Linda, CA	Yes	545	125	No
185801	Berry Petroleum	25121 North Sierra Hwy, Santa Clarita, CA	No	1,382	1,382	No
4242	San Diego Gas & Electric	14601 Moreno Valley, CA	No	4,485	26	No
51620	Wheelabrator	11500 Balsam St, Norwalk, CA	No	1,205	0	No
7117	LA City, Dept of Airports	275 Center Way, CA	No	1,557	1,451	No
47781	OLS Chino	5601 Eucalyptus Ave, Chino, CA	No	2,393	717	No
58949	LA Co. Sheriff	29300 The Old Rd, Saugus, CA	No	848	418	No
550	LA Co. Internal Services	301 N Broadway, Los Angeles, CA, 90012	No	540	387	No
15507	CSUF	800 N State College Bl, Fullerton, CA	No	503	22	No
166073	Beta Offshore	OCS Lease Parcels P-300 Huntington Beach, CA 92648 (Pacific Ocean)	No	14,000	14,000	No
117290	B Braun Medical	2525McGaw Ave, Irvine, CA	No	714	267	No
129497	Thums	1411 Pier D St., Long Beach, CA	No	1,165	784	No
185600	Bridge Energy	2000 Tonner Canyon Rd, Brea, CA	No	813	400	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 D: NAICS Codes for PAR 1134 Affected Industry

NAICS Codes	Description of Industry	Number of Units
423830	Industrial Machinery and Equipment Merchant Wholesalers	1
622110	General Medical and Surgical Hospitals	1
622110	General Medical and Surgical Hospitals	2
611310	Colleges, Universities, and Professional Schools	2
211111	Crude Petroleum and Natural Gas Extraction	2
486210	Pipeline Transportation of Natural Gas	4
221112	Fossil Fuel Electric Power Generation	1
488111	Air Traffic Control	2
221112	Fossil Fuel Electric Power Generation	1
922140	Correctional Institutions	1
921190	Other General Government Support	1
611310	Colleges, Universities, and Professional Schools	1
211111	Crude Petroleum and Natural Gas Extraction	6
325412	Pharmaceutical Preparation Manufacturing	2
211111	Crude Petroleum and Natural Gas Extraction	1
211111	Crude Petroleum and Natural Gas Extraction	2

APPENDIX E

Hazards Analysis

Appendix E

Hazards Analysis for PAR 1134 - Aqueous Ammonia

Summary

Facility	Additional Monthly Aqueous Ammonia Needed (gal/month)	Size of Tank (gallons)	Maximum Quantity Released (gallons)	Maximum Quantity Released (lbs)	RMP Value (miles)	Distance (feet)	Distance to Nearest Receptor (feet)	Significant?
A	3500	5,000	3,350	25,956	0.3	1584	0	Yes
B	84	250	168	1,298	0.1	528	72	Yes
C	1250	2,000	1,340	10,382	0.2	1056	876	Yes
D	1834	3,000	2,010	15,573	0.2	1056	410	Yes
E	584	1,000	670	5,191	0.2	1056	85	Yes

Notes:

1. Storage tanks should be sized to hold at least 1.5 times (https://www.tannerind.com/sto-aqua-ammonia.html)
2. RMP*Comp run at 77 degrees F
3. Maximum quantity release is assumed to be equal to 67% the capacity of the tank (see Note 1).
4. Facility A is adjacent to a sensitive receptor.